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Prevention of Storage Disorders in Apples

By H. H. Plagge

Iowa State College

PROBABLY the busiest time of the year for the apple grower is the harvest period. At this time he is much concerned with the picking, handling and disposal of the crop. Aside from considering the right time to pick certain varieties, he must pay strict attention to sorting, grading, packing and shipping if the crop is to be moved with little delay and in an efficient manner. If every grower had to store his own fruit for several months before he could sell it, he probably would pay more attention to what constitutes good storage packs and good storage management. The axiom "Well begun is half done" is very applicable when it comes to the packing of apples for storage, whether it be for common or for cold storage. It is likely that fruit growers do not always realize how high a percentage of apples go wrong in storage and why they go that way. There are a number of causes, and there are some remedial measures to consider in the prevention of certain storage disorders.

Apple Scald

Apple scald is now being controlled in boxed apples by wrapping the fruit in oiled paper. To Dr. Charles Brooks and his associates of the United States Department of Agriculture is due the credit for finding the most practical control measure for apple scald. A paper containing 16 to 20 per cent oil by weight has been recommended. For barreled apples, scald can now be controlled by distributing shredded oiled paper throughout the pack as the fruit is placed into the barrel. Very good control of scald on apples in barrels was secured in experiments at the Iowa station in 1924. The following results were obtained with Grimes, Arkansas and Sheriff:

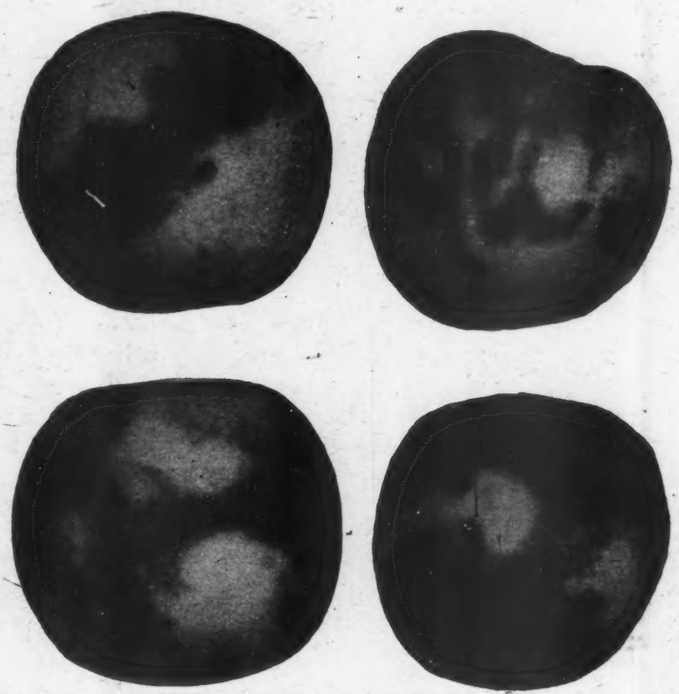
Variety.	Lot No.	Percentage of apple scald.[1] With shredded oiled paper.	Without shredded oiled paper.
Grimes	1	6.4	59.0
Arkansas ..	2	15.5	71.0
Sheriff	2	1.7	56.3

[1]After a four-day removal from cold storage.

The scald noted above was much more severe on the fruit placed in barrels without the shredded oiled paper. The type of scald present in the fruit packed in oiled paper was much less noticeable and affected the sale price less than the type of scald present where no oiled paper was used. Other investigators of the United States Department of Agriculture and of a few state experiment stations have reported similar results in the control of apple scald in barreled apples. With certain varieties, such as York and Sheriff, the pulp cells directly under the scalded area soon become soft. This permits apple rots to begin working in a very short time. Thus oiled paper tends to prolong the life of apples by postponing the date for destruction by rot fungi.

Other Storage Disorders

In addition to apple scald, there are quite a number of other disorders with which we have to contend with apples in storage. These are soft-scald, internal breakdown and Jonathan spot. The above disorders are particularly important in many of the fruit growing sections of the United States. In some apple regions bitter-pit and water-core are particularly common. In California internal browning is important on Yellow Newtown. In New York, Baldwin spot, drought-spot and cork are found, while in England and Australasia other similar disorders are attracting attention. It is not within the scope of this article to consider all these, but something may be said of soft-scald and Jonathan spot.



Grimes apples affected with apple scald. Scald is due to a breaking down of tissue caused by gases developing from the stored fruit. It can be prevented by wrapping the apples with oiled paper or by placing shredded oiled paper in the packages

Soft-scald and Jonathan spot are particularly common on the Jonathan. Soft-scald, as the name implies, extends into the flesh of the apple. The affected tissue consists of various brown patterns which usually have irregular characteristic outlines on the surface of the fruit. The disease at first involves only the skin, but soon extends into the flesh, causing it to become brown and soft. Other varieties which are commonly affected are Wealthy, Northwestern Greening, Rome and Esopus.

Many maturity experiments carried on in Iowa definitely show that soft-scald is directly related to time of picking, time of storing and to storage temperature. The late picked fruit has always had less soft-scald than the early picked fruit. Fruit which is low in color has always been the most susceptible to the trouble. Delayed storage at orchard temperatures for periods of two to three weeks has controlled soft-scald on Jonathan in all cases over a series of years. Soft-scald is associated with low storage temperature as it has always been most abundant on fruit which has been stored at 32 degrees Fahrenheit or at a slightly lower temperature. Soft-scald, however, should not be confused with freezing injury of apples. This disease has not been reported on fruit stored in air-cooled storage houses in Iowa where the temperature has averaged higher than in cold storage houses. Probably the best solution to the soft-scald problem lies in maintaining exact temperature control and possibly in storing susceptible varieties at a slightly higher temperature than 32 degrees Fahrenheit. Soft-scald has been reported in Iowa every year for the past seven years, and in some instances it has appeared to be more important than either apple scald or Jonathan spot.

Jonathan Spot

Jonathan spot occurs more frequently and more severely upon the Jonathan than upon any other variety. The disease consists of dark, usually black, spots in the skin of the apple. The spots are superficial and do not extend into the flesh. The red portion of the skin nearly always develops the greatest amount of spotting, consequently the spotting is dependent upon the amount of color. Although fruit which is rather severely affected is usually still edible, the chief disadvantage of Jonathan spot lies in the detraction in the appearance of the fruit. Badly Jonathan spotted apples necessarily have a very unsightly appearance, which practically always reduces the sale value. The disease is entirely physiological or functional and is not caused by any fungous organism, although apple-rot fungi may make an appearance in the spotted areas after Jonathan spot has been established for some time.

Jonathan spot is almost entirely a cool storage or cold storage disease. It is best controlled by storing the

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Editorial Contents

DEPARTMENTS

Pecan Culture as a Business

By C. L. Isbell

Alabama Polytechnic Institute

WHEN Editor Durst asked me to write this article, he requested that I so plan it that it would serve as wide a circle of readers as possible. Pecan growing is a large subject. It covers so much latitude that little can be said in a single article about any specific phase of the industry. This article will, therefore, be general in its nature. If there is a demand for further information on the subject, I shall be glad at a later time to furnish additional articles.

Pronounced Interest in Pecan Culture

There seems to be a pronounced interest in pecan culture at the present time. The Department of Horticulture of the Alabama Polytechnic Institute received more inquiries about pecans during the 12 months between July 1, 1924, and June 30, 1925, than on any other horticultural crop. These questions related to all phases of pecan culture, but the principal questions were as follows: Who is interested in pecans? What is the present status of the pecan industry? How can success be attained in growing pecans? What help is being given to pecan growers by agricultural institutions?

In answer to the first question, there are at least a half dozen groups interested in pecan culture, as follows: (1) nurserymen who grow trees for sale; (2) nurserymen who grow trees for personal plantings; (3) persons interested in the commercial production of pecans; (4) persons and companies interested in planting large acreages with the idea of dividing the grove into small acreages to be owned by individuals or co-operatives; (5) persons who are interested in growing a few trees about the homestead to furnish shade and nuts for home consumption; and (6) marketing organizations interested in the sale of the product.

Present Status of Pecan Growing

In the opinion of the writer, nurserymen who grow pecan trees have made a success of the business on the whole. Pecan trees are more difficult to propagate than such orchard trees as apples and peaches, but the prices for pecan trees have been higher, and the demand for pecan trees has nearly always been equal to or greater than the supply. Thus, there has been little carry-over of pecan trees.

Probably the most enthusiastic grove owners of today are those who were big plantation owners before the boll weevil invasion. These farmers had observed the behavior of seedling trees in comparison with those of named varieties, and for the most part they had made plantings of good varieties that were beginning to bear well when the boll weevil became serious. The price of pecans was good, and these growers were able to carry on until large groves could be set. These are now coming into bearing. Other growers observed the success that some of their friends were obtaining and immediately planted groves of considerable size that are now in bearing.

Varieties and Soil Treatment Important Factors

Growers who have made a success of pecan culture have learned that two factors are extremely important in the production of this crop. Varieties must be selected carefully. Proper soil management is essential to success. In the early days of pecan culture it was believed by many that pecans would thrive on any soil and with little care. It is now recognized that the pecan is a heavy feeder and that groves must be well managed if good results are to be obtained.

Young pecan trees in nursery rows at Simpson's Nurseries, Monticello, Fla.

It is now generally recognized that the more cover crops one can grow and turn under, the better will his grove pay. One of the best for winter use is hairy vetch. The velvet bean is used by some as a summer cover. Other cover crops are also used. The principal object of all successful growers is to incorporate in the soil all the organic matter possible. Clean cultivation is practiced during the late spring and early summer, when the trees need all of the moisture available. A few growers use the winter cover for pasture. One grower is using successfully a winter cover crop of rye, rape, hairy vetch and crimson clover in a grove that is being pastured. The rye and rape furnish pasture in the early winter and the clover and vetch provide feed during the early spring. The stock retains little of the fertility, as all the manure will go back to the grove. Such cover crops are turned under early in May.

The Development of Companies

In fairness to the general public and to many interested persons who live out of the pecan territory, a few statements should be made about development companies. Some people have made money out of groves they have never lived upon and which they see very infrequently if at all. Such groves may furnish a splendid source of nuts for gift packages and home use, and they may provide a place to which one may go for a pleasant winter outing. However, long-distance farming requires good management and careful planning by persons who understand the industry. If these factors are not recognized, an investment in a pecan grove will not prove satisfactory. The pecan is no exception to the economic laws which pertain to agricultural production in general.

Production of Pecans for Family Use

The success of pecan trees around the homestead has been a contributing factor to the development of pecan culture in the South. Generally these trees have given fair to good yields. The owners of many groves of this kind have planted larger acreages, and many general farmers have been encouraged to plant at least a few trees for the production of nuts for home use. A few trees of this kind provide a means whereby a farmer can procure nuts for his own needs much cheaper than he can buy them. In the growing of pecan trees around dwellings, it is very important that proper varieties be selected, that the trees be carefully set, and that the trees be protected from livestock and children until the trees are several years old.

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Clean cultivation being practiced by Clifton Cirkpatrick, Cahuba, Ala., after turning under a crop of winter vetch

In this pecan grove, owned by J. B. Wright, Cora, Ga., velvet beans are being grown as a summer cover crop

Rambles of a Horticulturist

By C. E. Durst

IT WAS my pleasure this summer to visit the leading fruit growing sections of Oregon. I want to tell you about this visit. In order that we may have a better background for the story, let us first consider some facts about the state in general.

Oregon is one of the important fruit growing states of the country. Its horticultural products are worth about $15,000,000 annually. Its 1925 production included 5,400,000 bushels of apples, 1,500,000 bushels of pears, 21,000,000 pounds of fresh prunes, 17,000,000 pounds of dried prunes, 12,000,000 pounds of cherries, 10,500,000 pounds of strawberries, 9,000,000 pounds of red raspberries, and large quantities of blackberries, Loganberries, gooseberries, plums, peaches, cranberries and nuts. Probably no other state, except California, grows a wider variety of fruits. This year the production of most fruits will be above the average. The state, besides shipping a great deal of fruit in the fresh state, cans and dries large quantities. Over 2,000,000 cases of fruit were canned in 1925, and in addition great quantities were dried and processed. The state is perhaps the best developed, outside of California, in equipment for canning and drying.

While fruit is grown over a large part of Oregon, it is for the most part grown in a relatively few sections. The most important of these are the Hood River district, the Willamette Valley and the Rogue River Valley, all of which I visited.

A general view of the Hood River district, looking south, with Mount Hood in the distance. What an inspiration this wonderful mountain must be to the Hood River growers, who have it in full view at all times

The Hood River District

The Hood River district is one of the most interesting in the state. It is located in the northern part of Oregon, a little west of the median line, and about 60 miles east of Portland. The beautiful Mount Hood, which is snow covered the year round, bounds the valley on the south and the Columbia River ends it on the north. The valley is only a small tract three to four miles wide and 15 to 18 miles long, containing about 23,000 acres of irrigated land. But notwithstanding the fact that the district is a relatively small one, it has established a reputation out of all proportion to its size.

It produces about 60 per cent of the apples grown in Oregon. In 1923-24 the shipments amounted to 6428 cars, in 1924-25 5514 cars, and in 1925-26 3394 cars. The shipments this year will perhaps exceed any of these figures. It also grows large quantities of pears and some strawberries, raspberries, prunes and sweet cherries. Hood River was the first district in the Northwest to establish a reputation for fruit of dependable pack and fine quality. The section is now particularly well known for its Yellow Newtown and Spitzenburg apples and for its D'Anjou pears. According to the analysis made by Ralph Rees for the New York Central Railroad, about 55 per cent of the apples are Yellow Newtowns, about 30 per cent Spitzenburgs and the remainder chiefly Ortleys, Arkansas Blacks, Jonathans, Delicious and Gravensteins.

The average rainfall in the district is about 32 inches. About half of this falls in the winter, about five inches in the spring, about nine inches in the fall and only an inch or two in the summer. Because of the small rainfall in the summer, irrigation is necessary. The water is obtained from Hood River and is spread by gravity through open water systems.

The winters at Hood River are usually mild, but in some seasons an extremely low temperature is suddenly reached; such spells usually occur early in the winter and constitute one of the greatest hazards of the industry in Hood River, as well as elsewhere in the Northwest. It is said that the winters are marked by the practical absence of wind.

Cultural Methods

The land in the Hood River Valley is very closely planted to fruit, mostly apples. For the most part the trees are planted too close. The growers now realize this, and many of them are thinning, but it is a hard thing for a man to cut down a healthy tree, and this circumstance is delaying the process, notwithstanding the fact that many who have thinned claim they are making more money now than formerly.

The trees are pruned to open tops. The eastern visitors asked if sun scald did not occur under these conditions, but the summer weather is not extremely hot, and the Hood River growers have suffered little or no damage from sun scald. Consequently, the open type of tree seems to be well fitted for these conditions. Certainly this system is giving good formation of fruit buds and a good set of fruit all over the trees, inside as well as out, and, furthermore, the fruit colors up well.

The Hood River growers, like those in all sections of the Northwest, do not have the trouble from insects and diseases in general that is experienced by eastern growers. Scale does not seem to be particularly serious. Apple scab is somewhat troublesome because of the damp weather in the spring. Codling moth is the most troublesome pest and is causing serious concern. Arsenate of lead has been depended upon for its control, but notwithstanding its frequent use, many apples become infested. The arsenic situation is causing serious concern, and growers are watching with great interest the new summer oil sprays which are being tried out. While some questionable opinions are heard, the results from these new materials appear to be promising. The summer oil sprays seem to have considerable value for controlling codling moth, both in the egg and larval stages. The material also seems to do little or no damage to foliage or fruit. The principal question now concerning growers and experimenters is whether the summer oils will prove themselves capable of satisfactorily controlling codling moth without the use of arsenicals in addition. If arsenicals must be used with them for satisfactory results, then an obstacle may be encountered in wiping the fruit, since the summer oils appear to make the arsenic stick rather tightly to the fruit. No doubt, however, practicable methods will be developed to handle this problem if it proves to be a serious one.

Formerly clean cultivation was successfully practiced in the Hood River Valley, but unsatisfactory results followed after a few years, due to deterioration of the organic matter. Practically all growers are now using summer cover crops, and alfalfa is the most popular one of these.

A fine crop of apples was in prospect and many growers had already set props under the trees in early July. The use of props is very common, and they give good results because of the comparative freedom from heavy winds during the summer.

Thinning of the fruit is a common practice. Often twice as many apples are removed as are left on the trees. As a rule, the trees are thinned twice. All small and defective apples are removed, and the remainder are uniformly spaced to about five or six inches apart.

The Hood River district is particularly well supplied with cold storage plants, practically all of which are owned by the Apple Growers' Association of Hood River. A large plant is located at Hood River, and others are located at strategic points in the valley. The valley has practically no facilities for canning or processing, and off-grade and surplus products are sent to The Dalles, located about 25 miles east of Hood River, or to the Willamette Valley to the west of Hood River.

No doubt a great deal of the success of the Hood River district is due to the Apple Growers' Association of Hood River, the operations of which are described on page 16 of this issue.

Cold storage plant of the Apple Growers' Association of Hood River, located at Hood River, Ore.

The Willamette Valley

Proceeding westward from Hood River down the beautiful Columbia River we next stopped at Portland. The Portland Chamber of Commerce, in co-operation with other organizations, entertained us in this vicinity. The chamber is one of a few organizations of its kind which is doing constructive work for agriculture. The work is being handled through an agricultural committee of 15 persons, headed by Col. E. E. Faville, editor of the *Western Farmer*. A fund of $300,000 was provided for the first two-year period, and $200,000 is being used during the present two-year period.

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Bringing More Land Under the Plow

HERBERT HOOVER recently outlined in an interview the waterway program of the administration. This program included at least five large projects that will add to the acreage of agricultural land and therefore increase the production of agricultural crops.

We believe the administration is making a serious mistake in promoting projects that will increase agricultural production. The country does not need any added land brought into production at the present time. If more land is brought under the plow, the agricultural situation will be made worse instead of better, and the farmers and fruit growers who embark in such projects will on the whole be the worst sufferers. The history of reclamation is full of cases in which growers have practically worked their lives out, and in which they have after five or ten years been forced to liquidate their holdings at bankrupt prices or abandon them.

We believe the country should continue such reclamation projects as are under operation, except those which have proved themselves impractical. We believe also that such projects as are under construction should be completed. Any other course would result in loss to the country and to the persons involved. But so far as the development of new projects is concerned, we believe the country should not undertake such things under present conditions. The question is a very serious one for agriculture, in our opinion, and we believe every farmer and fruit grower should in his own interest and that of agriculture in general strenuously oppose every program which promises to increase agricultural production at the present time.

Let's Do Our Own Boosting

THE FRUIT industry for the last eight or 10 years has been the prey of outside interests which have benefited themselves but have damaged the industry. The large crop and the unsatisfactory returns of the present season are, to some extent at least, the result of their activities.

A few years ago when farm prices broke, everybody began to preach diversification. Many people, including members of some colleges, began to encourage people to grow more fruits. Real estate men, business organizations and others saw the opportunity to boost their interests by promoting increased acreages of this or that crop. The railroads, ever anxious to increase their tonnage, have played no small part in such enterprises.

Of course, such activities help to bring in new growers; they help labor; they help real estate men to sell more land; they bring new money into the community; and they help to sell fertilizers, trees, etc. But do they help the growers? Certainly, many of the promotion campaigns conducted during the last few years have not helped fruit growers. Many who have embarked in such ventures have gone broke, and growers in general have suffered.

Fruit growers have been too easily led in such matters. They have not stopped to consider the subject in the light of their own interests in the long run. They have allowed outside parties to direct the trend of their business for them. Suppose that the fruit growers of a community were to go into a nearby town and begin to boost the organization of a new bank or hardware store. Business interests would soon tell them to stay out in the country and mind their own business. Fruit growers should adopt the same attitude toward these city-inspired promotion schemes. They should carefully examine every scheme of this kind to determine its soundness before supporting the same. On the whole, it will be best for growers to do their own boosting of such projects as are worthy, and they should tell others in no uncertain terms to quit tampering with their industry.

Agriculture Wants Fair Play

FRUIT GROWERS must keep in mind that the margin between cost of production and the sale price is very slim during years of record production. The cost of production is now history. The money has been spent whether efficiently or not. The only items of cost that can be reduced now are the cost of picking, grading, packing, transporting and selling. Some of these costs are already fixed more or less. For instance, the prevailing wages do not vary much and the cost of the package is constant for the season, yet the grower does not know what he is going to get for his product. The transportation companies knew when the apples bloomed what they were going to get to haul a car of apples a given distance. The fertilizer manufacturers knew what they were going to get per ton for an 8-4-4 before it was ever mixed. The price of their commodities and service is more or less fixed, at least it is stable. But the fruit grower does not know what he is going to get even after he produces a quality crop and pays these fixed expenses for the necessities of growing it.

What fruit growing and agriculture need is the stabilization of prices, not necessarily the fixing of prices. How could railroads bond themselves for huge sums if the bankers did not know in advance that they would be given a standard price per ton a mile for hauling the various commodities? If agricultural prices were stabilized, bankers would gladly finance farmers, but since the surplus sets the price of so many farm products, the risk is not safe.

An orchard is the hardest thing in the world to get a loan on because if neglected for three years it merely reverts back to land so far as earning power is concerned. Depreciation is swift and final. Can you blame the bankers?

Agriculture does not want special privilege or any sort of paternalism or any other ism. What it wants is equal opportunity with industry and commerce. Agriculture can have this equality of opportunity if farmers and fruit growers will set aside sectionalism and petty jealousy, quit wrangling among themselves and face those who are administering the government with a solid front and a determined purpose.—Tennessee Horticulture.

Registration Plan for Perishables Wins

SOME time ago application was made for an injunction to restrain Secretary of Agriculture Jardine from putting into operation the service and regulatory measure known as Announcement 97, otherwise known as the Sherman or Voluntary Registration Plan. This plan has been explained in previous issues of the magazine. The suit for the injunction was brought through attorneys Hightower & O'Brien, representing the Wisconsin Potato Growers' Association, Leonard, Crosset & Riley, S. A. Gerrard and Company and others.

Justice Bailey of the United States District Supreme Court, before whom the suit was tried, denied the injunction. This means that the registration plan will go into effect and that the fight which has been waged by certain interests in the produce trade has been lost by them.

Irrigation Has Its Compensations

GROWERS in eastern sections of the country are inclined to believe that irrigation of orchard and small fruits is a troublesome and expensive proposition and that they have a great advantage over western growers because they do not need to irrigate.

It is true that irrigation causes some extra work and expense, but it has a number of important compensating features.

In the first place, about all the western growers have to do after their irrigation systems are installed is to furrow or ridge the land preparatory to each irrigation, direct the water over the land, and then cultivate the land again after the soil becomes mellow. When cover crops are grown, the labor is sometimes less. After an irrigation, the western growers can allow their fruit land to go practically without attention for four to five weeks, or until the next irrigation is necessary. Weeds are not serious in such climates and can easily be kept under control—there are no rains every week or two to start the weeds and make cultivation necessary.

Growers in irrigated sections also have an advantage with reference to fungus infection. The dry air and the absence of frequent rains lowers the fungus infection. Apple scab, for instance, is practically non-existent in many sections of the West, and other diseases are not nearly so bad on the whole as in the East.

Another advantage of irrigated sections lies in the fact that a grower can apply water in whatever amounts and at such times as needed, provided he has an adequate supply. With him it is simply a question of exercising good judgment as to when and in what quantities the water should be applied. This advantage in itself is an important factor in fruit production. Irrigated sections are not dependent upon rainfall, which in humid sections is often too great or too small. We need only to cite the drought effects of last summer on the apple crop in the southeastern quarter of the country. Such conditions cannot occur in amply irrigated sections.

Irrigation is troublesome at times, and it is also expensive. However, these matters resolve themselves into the question of whether or not irrigation will pay. A slightly improved practice can easily make enough difference in quality or size of a fruit crop to pay big returns. Growers in eastern sections are making a mistake when they assume they have a big advantage over western growers because they do not have to irrigate.

Commercial Fixation of Nitrogen

COMMERCIAL fixation of atmospheric nitrogen is progressing much more rapidly in Europe, particularly in Germany, than in the United States, declared Harry A. Curtis, professor of chemical engineering of Yale University, New Haven, Conn., in an address before the second annual convention of the National Fertilizer Association.

"It is unlikely that the air nitrogen industry in the United States will be much of a factor in the agricultural nitrogen situation for the next few years at least," said Prof. Curtis, "but the general effect of the increasing production of the air nitrogen industry in Europe and elsewhere will certainly be to lower nitrogen prices."

The development in the air nitrogen industry is leading to more highly concentrated fertilizers, he said. More and more concentrated fertilizers for economical crop production will be put on the market as the more concentrated raw materials, obtained from nitrogen from the air, are made available and as farmers become more educated in their use. Agricultural research workers have insufficient data on the action of concentrated fertilizers at this time but are beginning experiments to supplement their present knowledge.

While not advocating the increased use of fertilizers as a sole remedy for the farmers' deficient income, he said that certain definite economies in production in crops, a saving in labor in particular, result from intelligent application of fertilizers.

"The farmers' costs of production must be lowered, and the best way to lower these is to enable him to get along with less labor. The use of fertilizers will permit this and therefore enable him not only to sell in the domestic market with greater profit, but because of the lowered production costs, to meet better the export prices."

While Muscle Shoals has been thought of more as a nitrogen fixation plant, nevertheless it has possibilities for the manufacture of phosphorus, the chemical element which is known most popularly by its use in matches, but which is also an important part of commercial fertilizers. A new process, known as the Liljenroth, for producing phosphoric acid from yellow phosphorus in an electric furnace, is being tried in this country, and one of the largest German plants has successfully adapted one of its nitrogen units for use of the new process. If storage of phosphorus raw material can be provided to meet seasonal conditions incident to low water periods, the process would then appear to have possibilities for utilizing secondary power at Muscle Shoals, said Prof. Curtis.

A New Thought on the Storage Problem

IF THE recent experiments of Prof. John McLean Thompson prove commercially practicable, a new outlet for alarm clocks and other sleep-wrecking devices will be created. The professor announces the perfection of a storage method that makes possible indefinite preservation of fresh fruits. This is done by literally putting the fruit to sleep.

Explaining his method of storage, Prof. Thompson, who is professor of botany at Liverpool University, claims that by means of simple apparatus the temperature of a room is kept at steady temperature and humidity. The fruit then goes to sleep and does not deteriorate.

He was led to the discovery by the fact that grain, when exported, was not put on ice but goes to sleep and keeps alive and healthy. By giving the fruit its natural condition, which is never allowed to change, the fruit does the rest. It becomes dormant, breathing ever so slightly.

His system is said to have proved successful with nuts, oranges and other citrus fruits and experiments then began with apples. Thirty cases of American apples, 10 of fairly good quality, 10 of moderate quality and 10 of very poor grade, were selected. After four months they were reported to be in perfect condition.

Prof. Thompson and his staff have been experimenting for three years and fruit exporters are said to be so impressed with the new system that they are preparing a new store room for further tests on a commercial scale.—*Citrus Courier.*

New Grading Machine for Tender-Skinned Varieties of Pears

THE CUTLER Manufacturing Company of Portland, Ore., is owned by two brothers, A. B. Cutler and F. H. Cutler, who formerly were apple growers at Hood River. As growers they developed the original Cutler machine. The manufacture of graders soon became such a large business that they began to devote their entire time to it.

The company built a new plant in Portland this year. It is of concrete construction and is 200 by 200 feet, with two stories.

The company is this year putting out a new grader especially adapted for barrel and box apples. A new machine is also being developed for handling tender-skinned varieties of pears, like the Comice and D'Anjou, which cannot be handled in the ordinary sizing machines. One of these machines was installed in the cold storage plant of the Apple Growers' Association of Hood River at Odell. This machine consists of compartments or bins of ordinary size arranged on an elliptical plan. The bins are rotated slowly around the machine so that each packer has an opportunity to select fruits of the size and grade he is packing as the bins pass before him. This prevents undue handling of the pears during packing and results in a better pack.

In the Odell plant the machine was placed in a cool room, and provisions were at hand for moving the pears into a precooling room immediately after being packed. This method of handling should minimize discoloring of the fruits. As a rule, discoloring of tender-skinned varieties is likely to be bad following the ordinary methods of packing, especially when the fruit is not moved immediately into cool quarters. The success of this machine will be watched with interest.

THREE members of the staff of the Bureau of Entomology of the United States Department of Agriculture have recently sailed for Europe to continue the investigations of the gypsy moth and brown tail moth infestations there, and to obtain natural enemies of these moths to be developed in the gypsy moth laboratories of the bureau and used in control work. The senior member of the group, preceding the others, will go into France, Spain, Portugal, northern Africa, Italy, Germany, Austria, Hungary, Czechoslovakia, Poland and the Balkans. The other two entomologists will study the two pests in certain selected infestations.

Peaches and the Peach Industry

Fourth Installment—By H. P. Gould

United States Bureau of Plant Industry

THE CHANGES which take place in the development of peaches have not been studied extensively, but some interesting things have been brought to light. The works of Bigelow and Gore (U. S. D. A. Bureau of Chemistry Bul. 97, "Studies on Peaches") are outstanding in this particular. While any detailed review of complicated chemical processes would be without appeal here, mention of some of the more practical aspects of these studies is worth while.

The fact that practically no starch was found, in the course of the investigations cited, in any part of the fruit at any stage of its growth comes not without some surprise. Hardly more than a trace of it occurs and that is found in a thin layer just beneath the skin.

The average percentages by weight of the different parts of some six or seven varieties at the market ripe stage was approximately: flesh, 92.3 per cent of the whole (by weight); stone, seven per cent; kernel 0.7 per cent. Between the June drop and market ripeness, or what is commonly termed a "hard ripe" condition, the fruits increased in weight nearly eightfold.

The proportions of solids in the flesh remained fairly constant throughout the development, being about 16 per cent, about 84 per cent therefore being water. The stone, on the other hand, passed through rather marked changes between the June drop and the hard ripe condition of the fruit, the solids increasing more than sevenfold. With this rapid increase after the June drop in the solids of the stone, it becomes evident from a practical standpoint that the usual advice to thin the fruit, where that is needful in order to get size, at once following the June drop has a substantial foundation. The development of the solids in the pits is a heavy drain on the vitality of the tree.

The changes in composition that take place between hard ripe and full eating ripe condition are less marked than during the earlier stages of development.

Cold Storage and the Peach Industry

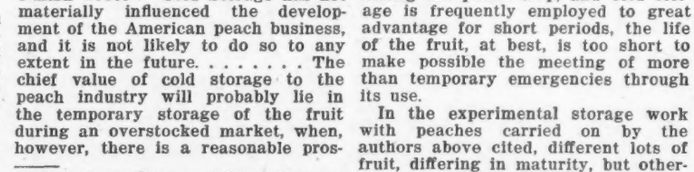
Nearly 25 years ago the late G. Harold Powell and the late S. H. Fulton wrote[1]: "Cold Storage has not materially influenced the development of the American peach business, and it is not likely to do so to any extent in the future. . . . . The chief value of cold storage to the peach industry will probably lie in the temporary storage of the fruit during an overstocked market, when, however, there is a reasonable prospect for a better market within two or three weeks."

These statements are as expressive of the situation today as when they were first made. Though refrigerator car service is a necessity in marketing the peach crop, and cold storage is frequently employed to great advantage for short periods, the life of the fruit, at best, is too short to make possible the meeting of more than temporary emergencies through its use.

In the experimental storage work with peaches carried on by the authors above cited, different lots of fruit, differing in maturity, but otherwise comparable, were placed in cold storage at 32, 36 and 40 degrees. In general, fruit that was highly colored and firm when stored at 32 degrees kept in good condition for two to three weeks. Such fruit retained its eating quality and held up two or three days when removed from storage. After three weeks in storage, the eating quality deteriorated. If the fruit was soft when stored, it went down more quickly. If picked in a too immature condition, it usually shriveled. Stored at 36 and at 40 degrees, the life processes went on more rapidly than at 32 degrees. At the higher temperature, after a week or 10 days, the flesh began to turn brown.

If any bruising of the fruit occurred, as when two fruits were pressed against each other very firmly in packing, the bruised area discolored in a few days. Wrapping the fruit provided considerable protection against bruising in packing and handling. Naturally, an early soft-fleshed variety possesses shorter storage durability than a firm-fleshed late maturing sort. Though the results here referred to are based on investigations made many years ago, there is apparently little to add to them now as a result either of additional research or practical experience. Except perhaps for some of the very firm-fleshed late varieties, three weeks appears to be about the limit of storage durability, and that only when the fruit is in the best possible condition and is properly handled.

[1] U. S. D. A. Bureau of Plant Industry Bul. 40. "Cold Storage, with Special Reference to the Pear and Peach," by G. Harold Powell and S. H. Fulton, p. 23.



Such equipment as this is not ideal for canning peaches, but under emergency conditions such a plant, with careful management, can be made to do good work at small expense

Some By-Products

It is sometimes said that the meat packers have reached such a degree of efficiency in by-product manufacture that they utilize all but the squeal of the pig that is slaughtered. The peach grower has not yet attained that perfection of economy. An excessively heavy crop of fruit, or one in which there is much low grade or over-ripe fruit, habitually means heavy losses, or at least large wastes. Though immense quantities of peaches are canned and dried, these activities, especially the latter, are carried on

(*Concluded on page 28*)

How I Built an Air-Cooled Storage Plant

By G. Leslie Smith

LAST year I built an air-cooled storage plant at Rock Island, Ill., to take care of the business I have gradually been building up at that place. This storage plant has attracted the interest of a considerable number of persons. Some of them have come many miles to see it. In view of the interest which these persons have shown, it occurred to me that an account of this storage house might be interesting to readers of the AMERICAN FRUIT GROWER MAGAZINE.

The Situation Which Faced Me

I found myself a year ago in the position that many fruit growers have found themselves from time to time. I had produced a large crop of apples of good quality. I lived near Rock Island, a city of 40,000 people, but instead of finding this city a satisfactory market for my product, I found that it was glutted by apples from other growers, who, like myself, had to sell their output during the fall and early winter because they had no desirable air-cooled storage plant and because cold storage rates were too high, in their opinion. What was I to do? Should I give my product away and resign myself to continue doing so every year that a large crop was produced in my section, or should I build an air-cooled storage of my own so that I might ride through the slump and gradually place my product on the market as the demand expressed itself? I decided in favor of the latter method, and my storage plant, pictured in connection with this article, is the result.

Fundamentals of Cool Storage Plant

Before I begin to discuss the details, let us get a few fundamentals of air-cooled storage out of the way. An air-cooled storage is a structure in which temperature, humidity and air circulation can be controlled sufficiently well to prolong the storage period of fruits and vegetables. The products cannot be kept so long in air-cooled storage as in a cold storage plant, but they can be kept longer than when stored in a place not built specially for the purpose.

Low temperatures are often difficult to maintain in the fall and early winter. Provision must be made, therefore, for taking cool air into the storage through cold air intakes at times when the air outside is cooler than in the inside of the plant. At the same time, the warm air is allowed to escape through warm air outlets. Such interchange of air is usually made during the night or early in the morning. As a rule, air-cooled storages are kept closed during the day in the fall and early winter. Likewise, during cold winter weather, the exchange of air is made during the warm part of the day and the storage is kept closed during the night.

Humidity must be regulated to keep the air of the storage room moist enough to prevent wilting of the fruit and yet dry enough to prevent mold and fungous growth. The moisture content is controlled by the evaporation of moisture and by absorption of excess moisture.

Air circulation or ventilation is necessary in order to remove gaseous products which result from the ripening processes taking place in the fruit. The accumulation of these gases is responsible for apple scald and for rapid ripening of the fruit.

General view of the air-cooled storage plant described in the accompanying article

Good Insulation Very Important

One of the principal factors in the construction of a storage plant is the insulation of the walls and ceiling in order that desired temperatures can be maintained. Many different kinds of materials and combinations can be used to obtain efficiency in the non-transmission of heat

(*Concluded on page 18*)

How to Make Trees Annual Bearers

HOW CAN a biennially overproducing tree be made to bear annual crops? Research Bulletin 75 of the Missouri Agricultural Experiment Station reports that a large percentage of the trees receiving nitrate of soda about the middle of September became annually bearing trees. It is believed, however, that the change was not due to the fertilizer treatment alone. Spring frosts reduced the crop of 1921 to about five bushels per tree, and this undoubtedly aided in bringing about the change. The frost was not responsible entirely in itself, however, for the check trees continued to bear biennially.

The York trees used in the experiments were suffering from a deficiency of nitrogen in the off year. An increase in the nitrogen supply was necessary to establish annual production. Spring applications of nitrogen will often bring irregularly bearing apple trees into regular bearing. This circumstance has been reported by Dr. Bradford of the Missouri Agricultural Experiment Station and other investigators. York trees, however, do not always yield to this treatment, for nitrate applied in the spring of a bearing year tends to increase the set and stimulates overproduction. The application of nitrogen in the spring of the off year is beneficial and has been reported by Prof. Crow of Canada and others.

The results obtained in Missouri suggest that spring applications of nitrate in the off year may profitably be supplemented by fall applications in some orchards. Nitrate applied about the middle of September is taken up by the roots and stored in the trees over the winter. An application of five pounds per tree in the fall of the off year was found to have no direct effect on the set of fruit the following spring. It tended, however, to promote the accumulation of carbohydrates in the non-bearing spurs, and in this way it favored blossom bud formation. The treated trees formed appreciably more fruit buds in 1921 than did the check trees. Some of the fruit bud formation took place on spurs that had blossomed the same spring, the flowers having been killed by the late spring frosts; however, 44 per cent of all the spurs forming fruit buds in 1921 were one-year-old spurs.

The condition of alternate bearing studied in the experiment is typical of many orchards, particularly of the York variety, and a similar condition is almost certain to develop sooner or later in York trees grown in sod. The growth relationships found in the experiment correspond closely to those reported by Prof. Auchter and Schrader with reference to annual and biennial York trees in Maryland.

J. Fennimore Cooper's Tribute to the Apple

AN APPLE is one of the masterpieces of nature. A vast complicated interplay of forces work together to produce it. For years the tree grows from seed to trunk and branches, and then, through many months, it carries on its secret subtle chemistry by which it distills its juicy sweets into ripened fruit.

It comes to us as one of the choicest gifts of nature, and now it appears on our tables prepared in many appetizing forms—apple sauce, apple butter, stewed and baked, apple pie, and even apple dumpling.

But why cook an apple? The raw fruit, just as it falls ripe and mellow from the tree, needs no culinary art to improve it. It melts in the mouth and sends its delicious sweets in a stream of exquisite sensations down along the whole digestive tract.

The apple is one of the most wholesome of our fruits and has healthgiving and medicinal virtues of the greatest value. It starts all the secretions into vigorous action and floods the system with a fresh tide of life. It is a friend of health and a foe of disease. It is food, tonic, condiment and cosmetic all in one. It imparts its own virtues, and its wine kindles brilliance in the eyes, and its ruddy colors plant roses in the cheeks. One can hardly eat too many of them.

Among the blessings of the year, let us number our great apple crop. Apples will be poured out upon our people in rainbow showers, and they will bring health and gladness to many homes.

EDITOR'S NOTE: This is a slightly revised form of an article which appeared in *The Chicago Packer* on August 8, 1925.

Proper attention to fall work saves a lot of time in the spring.

Time to Spray Citrus

THE SEASON for applying the fall spraying for white fly and scale insects is close at hand, says J. R. Watson, entomologist of the Florida Experiment Station. The earlier this can be done the better, for two reasons. In the first place, the white flies are more easily killed in their earlier stages of growth. In the second place, by spraying early one saves the drain on the trees resulting from the feeding of the insects.

Mr. Watson says that most citrus groves need to be sprayed in the fall for these pests. However, it is not safe to spray citrus trees with oil emulsions when the temperature is over 90 degrees or when there is too much young growth on the trees. By the latter half of September or early October the temperature is usually low enough and the growth hardened up sufficiently to make spraying safe.

Our best spray solutions for these pests are oil emulsions. The trees should be sprayed thoroughly, both upper and under parts of all parts of the trees being hit.

The fall spraying for white fly and purple scale is usually the most important spraying of the season.

"Lady, would you object to a gentleman smoking in your presence?"

"I don't know. I never had a gentleman smoke in my presence."

Fresh Fruit Exports of United States in 1925

By D. J. Moriarty
United States Department of Commerce

UNITED STATES exports of fresh fruits in 1925 had a total value of $42,220,582 as against a total value of $41,316,266 in 1924—an increase of $904,316. Our apple exports yielded $21,063,084, oranges $9,853,152, pears $4,125,450, grapefruit $1,505,579, grapes $1,428,969, berries $959,695, lemons $888,649, peaches $733,659, and other fresh fruits $1,662,345. The following chart shows the relative position of the various fruit exports in 1925:

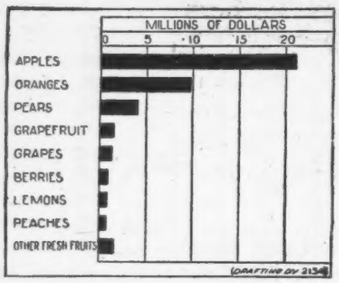


FIG. 1.—United States exports of fresh fruits for 1925, by values.

Production and Exportation of Apples

Commercial production of apples in the United States for 1925 amounted to 31,909,000 barrels, as against 28,063,000 barrels in 1924—an increase of 3,846,000 barrels. Washington led in production with New York second. Michigan and Idaho tied for third place, and Virginia, Oregon, Illinois, California and Pennsylvania followed in importance.

United States exports of boxed apples for 1925 amounted to 4,922,140 boxes (value $12,787,495) as against 6,718,872 (value $15,739,601) in 1924—a decrease of 1,796,732 boxes. Exports of barreled apples for 1925 amounted to 1,706,916 barrels (value $8,275,589) as against 1,880,716 (value $8,547,442) in 1924—a decrease of 173,800 barrels.

It should be noted that the 1924 crop of commercial apples in the United States was smaller than in the previous banner year, 1923. Washington produced around 3,325,000 barrels (approximately 9,975,000 boxes) less commercial apples in 1924 than in 1923; California 610,000 barrels (approximately 1,830,000 boxes) less, Oregon 200,000 barrels (approximately 600,000 boxes) less, and Idaho 1,000,000 barrels (approximately 3,000,000 boxes) less, while of the leading states shipping apples in barrels, all except Virginia produced smaller crops of commercial apples in 1924 than in the previous year. United States apple exports for the five months, January to May, 1925 (which exports came out of the 1924 crop), were 1,631,221 boxes and 375,536 barrels less than during the corresponding period of 1924.

Apple Exports, 1922-25

The following table shows total yearly exports of boxed and barreled apples from the United States during the years 1922 to 1925:

EXPORTS OF BOXED AND BARRELED APPLES, 1922–25

Years	Barrels	Value	Boxes	Value
1925	1,706,916	$8,275,589	4,922,140	$12,787,495
1924	1,880,716	8,547,442	6,718,872	15,739,601
1923	1,401,881	6,535,601	4,570,648	9,676,798
1922	540,703	2,599,032	3,323,165	7,396,634

Trend of Export Trade in Apples

The trend of apple exports from the United States is shown graphically in the accompanying charts.

Foreign Markets for United States Boxed Apples

In 1925 the United Kingdom was our principal market for boxed apples, with Canada second and Germany third. Of our larger markets, the European group (the United Kingdom, Germany, the Netherlands, Sweden, Denmark, and Norway) took 73.2 per cent of our exports of boxed apples in 1925; Canada, 11.1 per cent; the Latin American group (Brazil, Argentina, Mexico and Cuba), 8.7 per cent; and the Far Eastern group (the Philippines and China), four per cent—a combined total of 97 per cent.

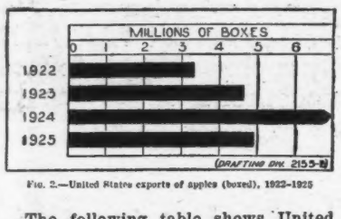


FIG. 2.—United States exports of apples (boxed), 1922–1925

The following table shows United States exports of boxed apples for 1925, 1924 and average yearly exports for 1922-24, also percentage taken by each country during these periods. Only countries taking one per cent or more are listed in the table:

UNITED STATES EXPORTS OF BOXED APPLES, BY COUNTRIES

Exported to	1925[1] Boxes	1925[1] Per cent of total	1924 Boxes	1924 Per cent of total	Average, Boxes	Average, 1922–24 Per cent of total
United Kingdom	2,587,854	52.6	4,167,941	62.0	3,200,680	65.3
Canada	547,929	11.1	556,868	8.3	491,544	10.0
Germany	462,326	9.4	619,209	9.2	222,437	4.5
Netherlands	267,846	5.4	294,580	4.4	113,178	2.3
Brazil	147,355	3.0	106,780	1.6	66,216	1.3
Argentina	131,981	2.7	105,151	1.5	82,125	1.7
Philippines	123,310	2.5	159,992	2.4	116,614	2.4
Sweden	114,426	2.3	134,312	2.0	104,111	2.1
Denmark	93,419	1.9	80,991	1.2	60,697	1.2
Mexico	84,405	1.7	135,487	2.0	110,027	2.2
Norway	82,844	1.6	90,661	1.3	139,361	2.8
China[2]	73,048	1.5	71,955	1.0	37,837	0.8
Cuba	63,900	1.3	75,727	1.1	61,993	1.3

[1]1925 figures are preliminary and subject to revision.
[2]Figures for China include Hongkong.

The above table shows that most of our principal markets for boxed apples took less in 1925 than in 1924. The following countries decreased their imports of United States boxed apples by the number of boxes indicated: the United Kingdom, 1,580,087; Canada, 8939; Germany, 156,883; the Netherlands, 26,734; Sweden, 19,886;

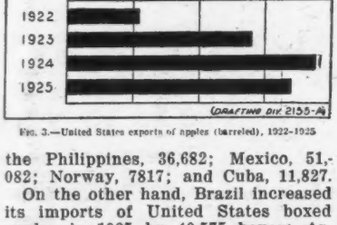


FIG. 3.—United States exports of apples (barreled), 1922–1925

the Philippines, 36,682; Mexico, 51,082; Norway, 7817; and Cuba, 11,827.

On the other hand, Brazil increased its imports of United States boxed apples in 1925 by 40,575 boxes; Argentina by 26,800; Denmark by 12,428; and China by 1093. Several of our smaller markets for boxed apples (countries taking less than one per cent) also took more from us in 1925 than in 1924. Countries showing such increases, and the number of boxes by which their 1925 imports were increased, are: Uruguay, 7207 boxes; Egypt, 8195; the Straits Settlement, 10,972; and Peru, 2189.

Foreign Markets for United States Barreled Apples

The United Kingdom was also our principal market for barreled apples in 1925, with Argentina second and Sweden third. Of our larger markets, the European group (the United Kingdom, Sweden, Denmark, Germany and Norway) took 89.1 per cent of our barreled apples; the Latin American group (Argentina and Cuba) 6.8 per cent; and Canada, two per cent—a combined total of 97.9 per cent. Very few of our barreled apples reach the Far East.

The following table shows United States exports of barreled apples by countries for 1925, 1924 and average yearly exports for 1922-24, also percentage taken by each country during such periods. Only countries taking one per cent or more are listed:

UNITED STATES EXPORTS OF BARRELED APPLES, BY COUNTRIES

Exported to	1925[1] Barrels	1925[1] Per cent of total	1924 Barrels	1924 Per cent of total	Average, Barrels	Average, 1922–24 Per cent of total
United Kingdom	1,345,899	79.1	1,564,432	83.2	1,067,290	84.0
Argentina	99,147	5.8	48,973	2.6	29,617	2.3
Sweden	85,949	5.0	94,225	5.0	44,150	3.5
Denmark	42,391	2.5	25,023	1.3	12,573	1.0
Canada	34,949	2.0	35,936	1.9	41,956	3.3
Germany	24,130	1.4	51,565	2.7	18,540	1.4
Norway	19,295	1.1	20,897	1.1	20,987	1.6
Cuba	17,106	1.0	15,773	0.8	19,285	1.5

[1]1925 figures are preliminary and subject to revision.

It is evident from the above table that several of our principal foreign markets took less apples in barrels in 1925 than in 1924. Countries showing such decreases and the amount (in number of barrels) by which imports were decreased are as follows: the United Kingdom, 218,533; Sweden, 8276; Canada, 987; Germany, 27,435; and Norway, 1602.

As opposed to this, several of our larger markets increased their imports, as indicated in the following (figures represent number of barrels by which imports were increased): Argentina, 50,174; Denmark, 17,368; and Cuba, 1333. Several of our smaller markets for barreled apples (countries taking less than one per cent) increased their purchases in 1925. Markets of this type, and number of barrels by which imports were increased, are: Brazil, 8723; Finland, 4817; Panama, 529; Uruguay, 660; Colombia, 684; and Dominican Republic, 799. France took 1950 barrels, as against 58 barrels in 1924; Russia in Asia 1100 barrels, as against none in 1924; and Bulgaria 361, as against none in 1924.

Production and Exportation of Oranges

Over 95 per cent of United States oranges are grown in California and Florida, and the remainder in Alabama, Arizona, Louisiana, Mississippi and Texas. A table recently published by the Department of Agriculture credits California with 20,400,000 boxes of oranges picked in 1925, as against 18,100,000 boxes picked in 1924; while Florida pickings in 1925 amounted to 14,100,000 boxes, as against the same amount in 1924.

United States exports of oranges in 1925 totaled 1,980,680 boxes (value $9,853,152), as against 2,564,043 boxes (value $8,687,097) in 1924—a decrease of 583,363 boxes. Our orange exports averaged 1,995,770 boxes yearly from 1920 to 1924.

Canada Our Leading Orange Market in 1925—Other Buyers

Canada was our principal market for oranges in 1925, taking 1,831,380 boxes (92.4 per cent). Canada was also our largest market for oranges in 1920-24, taking around 1,800,000 boxes (over 90 per cent) a year. Other orange markets in 1925 were the United Kingdom (31,327 boxes), the Philippines (31,219 boxes), China (29,854 boxes), Cuba (15,847 boxes), Newfoundland and Labrador (12,773 boxes), and Mexico (10,053 boxes). Smaller quantities were taken by Bermuda, Peru, Azores and Madeira Islands, Panama, Japan, the Netherlands, Australia, Straits Settlement, and Virgin Islands. Of these countries, China, Azores and Madeira Islands, Panama and Straits Settlement, increased their imports in 1925, while the other countries mentioned took less.

Production and Exports of Pears

The production of pears in the United States in 1925 amounted to 19,820,000 bushels as against 18,868,000 bushels in 1924—an increase of 952,000 bushels. California led in production, with New York second, Washington third, and Oregon, New Jersey, Colorado, Illinois, Pennsylvania, Michigan, Texas and Ohio following in order of importance.

United States exports of pears in 1925 amounted to 1,593,368 bushels (value $4,125,450), as against 922,584 bushels (value $2,184,791)—an increase of 670,784 bushels. England, which had a poor pear crop in 1925, took 479,460 bushels more from us in 1925 than in 1924. Our total pear exports during 1922-24 averaged 939,314 bushels a year.

Half Our Shipments of Pears in 1925 Taken by United Kingdom

In 1925 the United Kingdom was our principal market for pears, taking 797,661 bushels (50.1 per cent), while Canada took 576,296 bushels (36.2 per cent). Heretofore, Canada has been our best foreign market for pears, averaging 445,910 bushels a year during 1922-24, as against 372,192 bushels a year to the United Kingdom in the same period. Other markets for our pears in 1925 were Brazil, which took 99,848 bushels (6.3 per cent); Cuba, 48,052 bushels (three per cent); Argentina, 34,602 bushels (2.2 per cent); and Mexico, 14,139 bushels (about one per cent). Each of the following countries took over 500 bushels; the Netherlands, Panama, Peru, Uruguay, Germany, Dominican Republic, Venezuela, the Philippines, Newfoundland and Labrador, China and Azores and Madeira Islands.

FIG. 4.—United States exports of grapefruit to United Kingdom, 1922–1925

Grapefruit Production and Exportation

Practically all the grapefruit grown in the United States is produced in Florida, although California, Arizona, Mississippi and Texas produce small amounts. The Department of Agriculture credits Florida with 8,200,000 boxes of grapefruit picked in 1925 as against 10,500,000 boxes picked in 1924.

United States exports of grapefruit in 1925 were 446,881 boxes (value $1,505,579), as against 312,583 boxes (value $876,028) in 1924—an increase of 134,298 boxes. This increase in exports is due largely to larger shipments to the United Kingodm is illustrated in the above chart.

Grapefruit Exports, with Percentage to Canada and United Kingdom

The following table shows total exports of grapefruit from the United States for 1922-25, also exports to Canada and the United Kingdom, with percentages taken by each:

EXPORTS OF GRAPEFRUIT FROM UNITED STATES

	Total		To Canada		To United Kingdom	
Year	Boxes	Value	Boxes	Per cent of total	Boxes	Per cent of total
1925*	446,881	$1,505,579	280,830	63.0	141,300	31.7
1924	312,583	876,028	249,097	80.0	47,720	15.4
1923	281,406	854,881	255,182	91.1	15,195	5.4
1922	223,917	757,214	207,233	92.5	10,088	4.5

*1925 figures are preliminary and subject to revision.

It can be seen from the preceding table that Canada is our principal foreign market for grapefruit, with the United Kingdom second. Smaller markets for these exports in 1925 were Germany, France, Newfoundland and Labrador, China, the Philippines, Bermuda, Argentina, Venezuela and the Straits Settlement, each of which took over 500 boxes.

Grape Production, Exportation and Markets

Around 90 per cent of the grapes grown in the United States come from California, while New York, Michigan, Ohio and Pennsylvania follow in importance as producing states. In 1925 the production of grapes in the United States amounted to 1,967,160 tons, as against 1,763,742 tons in 1924—an increase of 203,418 tons.

United States exports of grapes in 1925 amounted to 24,265,135 pounds (value $1,428,969), as against 20,575,537 pounds (value $1,297,249) in 1924—an increase of 3,689,598 pounds. Canada is our principal market for grapes, taking 16,164,311 pounds (67 per cent) in 1925, while Cuba took 4,002,532 pounds (16.7 per cent); Mexico 1,996,071 pounds (8.3 per cent); and the Philippines 879,493 pounds (3.7 per cent).

Berry Production and Exportation—Canada the Chief Market

Berries of various kinds (strawberries, loganberries, etc.) are produced in Washington, Louisiana, Arkansas, Missouri and other states.

United States exports of berries in 1925 amounted to 8,142,266 pounds (value $959,695), as against 10,684,914 pounds (value $1,056,656) in 1924—a decrease of 2,542,648 pounds. Canada is our principal market for berries, taking 7,109,967 pounds (88.7 per cent) in 1925, while the United Kingdom took 905,867 pounds (11.2 per cent).

Production and Exports of Lemons

Practically all lemons produced in the United States come from California. According to the Department of Agriculture, California is credited with 6,000,000 boxes of lemons picked in 1925, as against 5,125,000 boxes picked in 1924—an increase of 875,000 boxes.

United States exports of lemons in 1925 were 161,649 boxes (value $888,649), as against 228,494 boxes (value $898,373)—a decrease of 66,845 boxes. In 1925 the United States also imported 1,384,857 boxes of lemons (value $2,679,042), while in the period 1922-24 our imports of lemons averaged 1,126,327 boxes a year. Practically all of our imported lemons are from Italy.

Canada is our principal market for lemons, taking 127,496 boxes (79.5 per cent) in 1925. Smaller markets for lemons in 1925 were China, which took 13,057 boxes (eight per cent); Japan, 7676 boxes (4.7 per cent); and the Philippines 7330 boxes (4.5 per cent), Cuba, Panama, Bermuda and Mexico each took over 500 boxes. While Canada took 60,533 boxes less in 1925 than in 1924, China, Japan, the Philippines, Cuba and Panama increased their purchases.

Peaches Somewhat Below 1924 Exports—Canada Takes 90 Per Cent

The production of peaches in the United States amounted to 46,565,000 bushels in 1925, as against 54,119,000 bushels in 1924—a decrease of 7,554,000 bushels. California led in production, with Georgia second, Arkansas third, and New York, Texas, New Jersey, North Carolina, Tennessee, Alabama and Ohio following in importance in the order named.

United States exports of peaches in 1925 amounted to 338,030 bushels (value $77,659), as against 334,882 bushels (value $670,711) in 1924—an increase of 3148 bushels. While California leads in the production of peaches, shipments from Georgia are considerably larger than those from any other state.

Canada is our principal market for peaches, taking 312,103 bushels (over 90 per cent) in 1925. Smaller markets in 1925 were Cuba, which took 9436 bushels (2.7 per cent); the United Kingdom, 7403 (2.2 per cent); Mexico, 6050 (1.8 per cent); and Panama, 3227 (one per cent). Australia took 542 bushels.

Other Fresh Fruits Comprise a Considerable Item

In 1925 the United States, in addition to its exports of fruits already covered, exported 36,672,521 pounds (value $1,501,362) of "Other fresh fruits," as against 30,589,750 pounds (value $1,196,016) in 1924—a decrease of 6,082,771 pounds.

Canada is our principal market for exports of "Other fresh fruits," taking 31,420,126 pounds (87.2 per cent) in 1925. Other markets in 1925 were Cuba, which took 2,289,199 pounds (6.3 per cent); Mexico, 1,311,120 pounds (3.6 per cent); and the United Kingdom, 1,135,515 pounds (3.1 per cent).

In addition to "Other fresh fruits" just enumerated, should be included 774,439 pounds designated as "Other subtropical fruits" (value $23,526) and 36,781 boxes of pineapples (value $137,457), practically all of which went to Canada.—*Commerce Reports* (*March* 29).

Production of Potash in the United States Increasing

THE PRODUCTION of crude potash in this country in 1925 was 51,544 short tons, against 43,719 short tons in 1924. The production of pure potash, however, increased only 11.1 per cent, but the production of crude potash increased 17.9 per cent. The value of pure potash per ton at the plants in 1925 was $46.66.

The production of pure potash in the United States in 1925 was roughly one-tenth of its total imports, and the value of all the potash produced in this country was $1,204,024. As the first considerable production of potash in this country was made in 1915 and was only 1090 tons of pure potash, the production of 25,439 tons of pure potash in 1925 is highly gratifying. It was, however, less than half the production in 1918, when this country was cut off from the European supply.

As potash is being imported at less than the pre-war price, it is surprising that the production in this country can be maintained at its present volume.

The chief source of domestic potash in 1925 was the natural brine at Searles Lake, Calif., but some was produced from the dust of steel plants in Pennsylvania and from distillery residue from molasses plants in Maryland. Sales from stock on hand were made by one cement company, but no potash was produced from cement dust in 1925. Only producers from natural brines have been able to hold their own recently against the low price of imported potash.

The Geological Survey reports that there may be some increase in the production of potash at Searles Lake and that there are large untapped resources of potash in the salt beds of the Southwest. A bill is now pending in Congress to appropriate $100,000 a year for the next five years for investigations of the potash in these salt beds.—*The Fertilizer Review.*

Imported Clover and Alfalfa Seed Must be Stained

THE GOODING-KETCHAM bill passed by Congress and signed by President Coolidge became effective on May 26. This law requires the Secretary of Agriculture to stain and brand all imported clover and alfalfa seed so that the American growers may know the source of the seed. All unadapted seed, or at least a goodly portion of it in every lot, is to be stained red. Other imported clover and alfalfa seed is to be stained with the color of dye indicative of the country of origin; in all probability the Secretary of Agriculture will adopt different colors for the various countries of origin.

A statement must accompany the seed showing the source of origin. Misbranded and unbranded seeds will be subject to confiscation. The bill was enacted into law over determined opposition on the part of some of the seed interests.

A SURVEY of orchards and vineyards in Ohio was recently made by the staff men of the Ohio Department of Agriculture. The results are printed in a bulletin entitled, "Ohio Commercial Orchards and Vineyards" by C. J. West. The bulletin pertains to apples, peaches, grapes and miscellaneous fruits and gives information as to the acreage and number of trees in commercial orchards, age of trees, percentage of varieties, commercial production, etc. Copies of the bulletin may be obtained from the Department of Agriculture, Columbus, Ohio.

THE MUTUAL Orange Distributors of Redlands, Calif., has again won grand sweepstakes for its Pure Gold oranges at the California Valencia Orange Show. It has now won this prize four times at five consecutive shows. It has also won 11 silver cups, 19 first awards, 13 second awards, four third awards and a large cash bonus.

Identification of Raspberries by Means of Leaf Characters

WE BELIEVE our readers are quite familiar with the work conducted by Prof. J. K. Shaw of Massachusetts by which apple varieties can be identified by means of leaf markings. Thus, varieties may be identified in the nursery row.

The Minnesota Experiment Station is making similar studies with reference to red raspberry varieties. Thus far the study has shown that varieties may be identified by growth characteristics alone. The principal characteristics used for identification are abundance, color and structure of the spines on the cane and leaf stems; the number of leaflets on each leaf stem; and the length and character of the surface of the canes. A key to 15 varieties of red raspberries has been prepared.

Work is also being conducted with the object of determining methods of identifying plum varieties by means of leaf characteristics.

Pioneer Walnut Grower

FERD GRONER of Scholls, Ore., is one of the pioneer growers of English walnuts in Oregon. He has 120 acres in bearing and 10 acres not in bearing. Most of the trees are Franquettes. The groves are in excellent condition. Mr. Groner has to date found it unnecessary to spray or fertilize. Blight causes some damage, but this, of course, cannot be controlled by spraying. Clean cultivation is practiced during the summer and barley and other cover crops are grown during the mild winters. The trees are planted 27 to the acre.

Mr. Groner expects a yield of about 40 tons this fall. The crop of 1925 amounted to 33 tons. He sells about 10,000 pounds yearly directly to consumers in Portland as a result of a consistent plan of advertising and distribution which he has followed.

Japanese Beetle Quarantine Area

A MEETING was held at Washington, D. C., September 25, to consider the advisability of including New York and Connecticut in the area quarantined on account of the Japanese beetle. The beetle has recently been found at several points in these states. Extension of the quarantine area would place restrictions on interstate movement of farm, garden and orchard products of all kinds from the area quarantined.

Don't forget to spray for peach leaf curl this fall or early next spring.

The Editor's Mail Box

Peach Leaf Curl and Leaf Roller

Editor, AMERICAN FRUIT GROWER MAGAZINE: I am enclosing some leaves from the four-year-old peach trees in our orchard and wish to ask if this is the disease called peach leaf curl and if it is advisable to apply a spray for the control of this disease at this season. If so, what do you advise?

A part of our young apple trees were hurt last year by a pest that worked on the leaves. The leaves turned brown, rolled slightly but hung on the trees. This spring we went over the orchard and destroyed every old leaf that remained on the trees. We had a hail last year in May that hurt the trees some, but this leaf disease did not appear until late in the summer. I enclose one or two apple leaves that show the same symptoms as last year.—J. L. M., Indiana.

ANSWER: The peach leaves which you sent were infected with peach leaf curl. There is nothing that you can do now to counteract the effects of this disease. However, you can determine now to adopt measures that will give you good control of this disease next year. To control it, spraying must be done while the trees are still dormant. Spray with lime-sulphur solution, 12 gallons in 100 of water, in the early spring before the buds begin to swell. This is the only satisfactory method by which you can control leaf curl. If you wait until the leaves come out, the fungus will have gained entrance to the tissues of the leaves and you cannot then reach them with a spray. The disease lives over winter in the form of spores clinging to the bark and buds and you must destroy these before the spores germinate in the early spring. Some authorities report satisfactory control from spraying in the late fall after the leaves have dropped.

The apple leaves reached us in very poor condition. I am unable to give definite advice regarding them. However, it appears to me that these leaves may have been attacked by leaf roller. This insect is a very difficult one to control with ordinary arsenical poisons. It has been found that about 95 per cent of the eggs of the insect can be destroyed by one application of a miscible oil, one part in 19 parts of water, applied early in the spring while the trees are dormant.

Arsenate of lead used in the same way as for codling moth will usually check the leaf roller also

Brown Rot is Responsible

Editor, AMERICAN FRUIT GROWER MAGAZINE: My plum trees were heavily loaded this year, but the fruit rotted when it neared maturity. What was the cause of this and what is the remedy?—G. J. H., Iowa.

ANSWER: I think that brown rot must have caused the rotting of your plums. This disease behaves in exactly the manner you describe.

You can control brown rot successfully by spraying. The best materials to use are Bordeaux mixture and lime-sulphur solution. I would suggest that you make one application just before the buds open in the spring of the year and then follow with additional applications at intervals of a week to 10 days after the petals have fallen. Do not spray while the trees are in bloom. Continue the applications until two or three weeks before the fruit ripens. If you keep the foliage and fruits thoroughly covered, you will have no trouble in preventing loss from brown rot.

Lime Not Good for Raspberries

Editor, AMERICAN FRUIT GROWER MAGAZINE: I am planning to plant a large patch of raspberries. I would like to know if it would be advisable to lime the land. If so, how much should I use?—E. H., Pennsylvania.

ANSWER: I think it would be inadvisable to apply lime to land that is to be planted to raspberries. Lime benefits many crops, but brambles appear to prefer an acid soil; there are many cases of damage on record from lime that was applied to raspberry land.

If the land is extremely acid, it might be advisable to apply a small dressing of lime, but I do not believe it would be advisable to apply a large quantity.

Raspberry Diseases

Editor, AMERICAN FRUIT GROWER MAGAZINE: I have a large patch of black raspberries. The leaves on some of the new canes are curling up. Can the trouble be in the soil or is something working on the plants?—F. S. F., Illinois.

ANSWER: You have not given me sufficient information to enable me to identify your trouble positively. Leaf curl often causes the leaves of red raspberries to curl but this disease is not known to affect black raspberries. The mosaic disease of raspberries, which is rather common and widespread, causes the leaves to become mottled yellow and green with puckers and blisters along the veins. The plants make a poor growth as a rule when infected with this disease and the fruit is small and tasteless as a rule. After one becomes familiar with this disease, he can detect it rather readily. Unfortunately, spraying has been found of little or no value in the control of this disease. About the only thing you can do is to make yourself familiar with the symptoms of the disease, then go over the patch frequently in search of diseased plants and destroy them at once as completely as possible. Such treatment will prevent or delay infection among the remainder of your plants.

Napoleon and Royal Ann Cherries Are the Same

Editor, AMERICAN FRUIT GROWER MAGAZINE: Will you please tell me if there is any difference between the Royal Ann and Napoleon sweet cherries.—R. E. J., Idaho.

ANSWER: While I was in Oregon this summer, Prof. W. S. Brown of the Oregon Agricultural College gave me some information which seems to clear this point. The question is apparently puzzling many growers.

In 1849 Seth Llewelan brought sweet cherry trees and other nursery trees with him when he made the trip across the plains and deserts by covered wagon. How he kept the stock from being destroyed is a mystery. During the trip the labels became lost or misplaced, and Mr. Llewelan could not remember the name Napoleon and he renamed the variety the Royal Ann. There seems little doubt, therefore, but that the Napoleon and Royal Ann cherries are the same variety. Experts who have compared from every standpoint trees purchased under both names claim they are of the same variety.

Treatment for Peach Trees With Yellow Leaves

Editor, AMERICAN FRUIT GROWER MAGAZINE: In the spring of 1925 we set out 260 two-year-old peach trees. We have lost about 88 of these trees and the rest seem to have foliage of a very yellow color. They do not seem to be as thrifty as last year. I should appreciate your advice as to how we can return these trees to life.—R. A. N., Ohio.

ANSWER: The leaves of peach trees may become yellow from a number of causes. Several diseases may cause a condition of this kind. What disease, if any, is causing the trouble can be determined only by a careful examination of the infected leaves.

Most of these diseases can be controlled by keeping the trees well sprayed with self-boiled lime-sulphur or dry-mix or one of the manufactured preparations.

If it is an external disease, you should have no trouble in controlling it by spraying in the manner outlined, but if the trees are infected with a disease like yellows, spraying will not control it. The trouble may also be

...e in whole or in part to a shortage ... water or nitrogen. However, in ...ch cases the trees usually do not ...o quickly but commonly continue to ...ve in a devitalized condition for ...me time. If you feel that your trees ...ve suffered from drought or nitro... shortage, then I suggest that you ...ractice thorough cultivation and ap... manure or a quick acting fertilizer ...ke sulphate of ammonia or nitrate of ...da.

I would suggest that you write to ...he Ohio Agricultural Experiment Sta..., Wooster, Ohio, about the matter. ...The authorities there are thoroughly ...equainted with your local conditions ...nd can give you the most authorita...ive advice.

Apple Cedar Rust

Editor, AMERICAN FRUIT GROWER MAGAZINE: We have a nice young apple orchard and the trees seem perfectly healthy. About May 1 the leaves began to show spots, and later the apples developed ugly olive-colored spots. We sprayed several times with lime-sulphur and arsenate of lead.

We have numerous cedar trees in the vicinity. Could it be that these are causing the trouble? I am sending samples of the apples. Will you identify the disease and advise us regarding it?—V. A. D., Iowa.

ANSWER: The apples which you sent were affected with apple cedar rust. No doubt the cedar trees are responsible for your trouble.

Spraying with a good fungicide, such as lime-sulphur or Bordeaux mixture, will do much to control this disease. You should begin application immediately after the fall of the petals and repeat sufficiently often to keep the foliage and young fruit completely covered with material until about July 1.

By means of spraying you can keep the disease checked to a large extent. However, you will never be able to secure complete control until you destroy all cedar trees growing in the vicinity. The spores of cedar rust are often blown a mile or two by the wind, and you ought to destroy the trees for at least a mile around your place.

If apple growing is an important item in your vicinity, perhaps you can get other growers to co-operate with you and in this way bring about the destruction of the cedar trees in your territory. Many states have laws which require the destruction of cedar trees in apple growing districts when a sufficiently large number of growers request such eradication.

Control of Twig Blight

Editor, AMERICAN FRUIT GROWER MAGAZINE: Will you kindly tell me if there are any remedies or preventives for twig blight?—J. R. S., New York.

ANSWER: Twig blight is caused by bacteria which live within the tissues of the plant. It is practically impossible to entirely eliminate the disease, but you can keep it under control by proper methods.

If you will inspect your trees frequently during the growing season and cut out all twigs as soon as they show infection, you can keep the blight under control. This practice is being followed successfully in Michigan, the Northwest and California, and it is spreading to other sections.

Twig blight also causes cankers to form on the trunk and branches of the trees. These cankers should be trimmed carefully until apparently healthy tissue is reached. The wounds should be disinfected. A good solution is made by dissolving one tablet of cyanide of potassium in a pint of water and a tablet of cyanide of mercury in another pint of water. Then pour the two solutions together and store in a glass jar. Apply the material with a brush or swab. Deep wounds should be filled with grafting wax or concrete. Sometimes the cankers develop on the roots of the trees. It is a good thing to dig the soil away from the base and remove any cankers which are found at the crown and near the top of the main roots.

You will find an article in our February issue by H. A. Cardinell explaining the methods used in Michigan. I suggest that you read this article and employ the practices recommended.

Preserving a Pear Variety

Editor, AMERICAN FRUIT GROWER MAGAZINE: On our place we have some pear trees of a variety which is almost extinct. We should like to preserve the variety. Can we do this by sawing off the trees and allowing new trees to develop from the shoots that emerge from the roots?—A. C. H., Tennessee.

ANSWER: It would be inadvisable, in my opinion, to attempt to renew the trees from the shoots which spring up from the roots or from the crowns of the trees. Quite often such shoots come out below the graft if they emerge from the crown, and of course they always come out from below the graft if they appear on the roots. In this event, the trees will partake of the character of the seedling roots which were probably used in the propagation of your pear trees and not of the upper part. Of course, if a tree should happen to be the result of a seedling in the first place, such sprouts will produce pears of the same kind as the tree is producing at present.

In order to perpetuate the variety before the old trees die, I would suggest that you take scions or buds from the trees and propagate new trees from them. Grafting should be done in late winter or early spring, and in this case you would want to work the scions on seedling roots. You can also topwork scions onto branches of trees that are several years old. This method would give you trees that would bear pears like the old trees in the shortest possible length of time.

If you want to use budding, you will need to take buds in July or August from growth of the current season and place these near the base of one-year-old seedlings. When the buds start to grow the following spring, the top of the original tree is removed so that all growth will be forced into the new shoot. This new shoot will develop into a tree that will bear fruit like the old trees.

The series of articles on propagation of fruit plants which we recently printed in the magazine will give you further details regarding methods of propagation.

They had just sealed their engagement with a kiss.

"And, David, dear, I am a graduate in home economics," she whispered.

"Well, never mind that," he returned generously. "I suppose we can board."

Wife—A little bird told me you were going to buy me a diamond ring for my birthday.

Hubby—It must have been a little cuckoo.

Monthly Market Review

THE FOLLOWING summary of the fruit marketing situation was furnished by the United States Bureau of Agricultural Economics on September 8:

"Fruit shipments have been the heaviest feature of the produce movement ever since midseason. It was one of the greatest seasons on record for melons and peaches. Apples, pears and oranges are likely to maintain the prominence of the tree fruits in the market supply. In fact, most of the season's increase in shipments over that of last year is because of the heavy fruit movement.

Apple Supply Liberal

"While the carlot movement from the eastern apple sections is not especially heavy, the western shipments began early and continued active. Local supplies also were heavy in practically every section. Most markets are over-supplied and prices have tended a little lower than last season, ranging from 50c-$1.75 per bushel, compared with 75c-$2 for the corresponding range a year ago. Such a range, of course, includes the leading grades and numerous varieties in the principal eastern markets. Some of the early stock from the Northwest sold as high as $1.75-$2.50 per box. Sales of late varieties on contract have not been numerous, but indicated range is slightly lower than in 1925. Prices at northwestern shipping points are also some 20 per cent below last season on various leading varieties.

"The apple situation in Canada seems much the same as in this country. The Canadian Northwest has a large crop of large sized fruit. The export trade opened well with some rather high prices quoted for early red fall varieties of American apples.

"The apple crop in Europe seems to be very moderate again this season, particularly in the British Islands, and even the early markets are being supplied considerably with imported fruit.

"The pear crop presents more of a problem in marketing than usual because the crop is one-third larger this season and most sections will have a surplus, although the crop is estimated one-third lighter in the important pear state of New York. British markets welcomed first shipments of California pears at satisfactory prices.

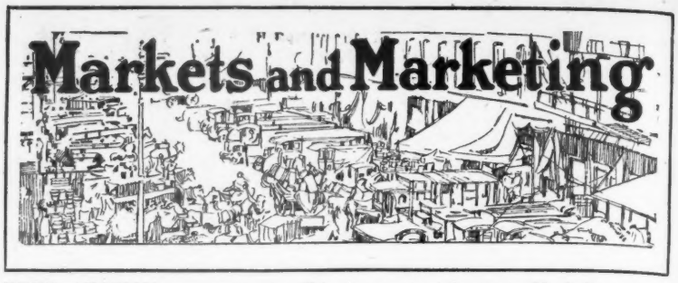
Peaches Still Plentiful

"Most markets are still over-supplied with peaches. Shipments have continued heavy for many weeks in succession. Source of supply is shifting to the north, and shipments are beginning from eastern New York. Western peach movement continues active. The great fall shipping states are New York, Pennsylvania, Ohio and Michigan. Movement usually continues active during September and sometimes fairly active during the first half of October. The later peach shipping states escape competition from the main rush of southern peaches, but the edge of the market has been taken off this season by the liberal supply from early shipping sections. Much good southern fruit has been sold around $2 per bushel. The northern crop started at somewhat higher levels but has been selling very low in September with a general range in many markets of $1.25-$2 per bushel.

Eastern Grapes Moving

"The eastern grape shipping sections, including Michigan, have been getting under way in September. New York stock has been selling at 75 cents per 12-quart basket, and western Concords 22c-28c per four-quart basket. California grapes are a great feature on the market. Heavy shipments are likely to continue for months to come. Prevailing ranges are 10c-20c lower per crate than last season, ranging 70 cents to over $1 for leading varieties."

A recent court decision in California upheld the Director of Agriculture in canceling the license granted a concern which was selling an insecticide for which extravagant and misleading claims were made.



THE AUCTION companies in Chicago have arranged to handle all California grapes in one combined auction. All sales of juice stock are to be made on the basis of inspection reports issued by the Chicago office of the Bureau of Agricultural Economics. It is estimated that at least 5000 cars of juice grapes will be sold in this manner between August 25 and December 1.

The auction company will promptly furnish the federal agents with the car numbers of arrivals. The inspectors will select nine lugs from the doorway and top layer of each car and inspect these in the usual way for condition, marking each of the lugs with a sticker furnished by the auction company. Employes later will take out these inspection lugs for display. A summary of the inspection will be prepared and posted on each car for the information of bidders. Regular certificates are to be issued for the use of buyers. Sample lugs will be replaced in the car after sale so that diversion can be made to outside points if desired. This system seems to be working satisfactorily and promises to prove a real aid in the handling of the large juice grape tonnage.

HOT WEATHER during the latter part of August caused premature ripening of the Oregon prune crop. A heavy drop occurred right at the beginning of the drying season. This resulted in a swamping of the dryer capacity. In many orchards so much spoiled fruit accumulated under the trees that sorting was impossible and all or practically all of the crop was lost. Rather low prices have prevailed. Opinions now vary as to the size of the crop. It is evident that the early estimate of about 60,000,000 pounds of dried prunes will be materially reduced.

A CAR of peaches was shipped this summer from Macon, Ga., to Liverpool, England, via New York. The car arrived 14 days after departure from the original shipping point. The fruit was packed in six-basket crates. It arrived in good condition and sold for prices ranging from $3.89 to $4.14 per crate. The special refrigerator pack did not carry satisfactorily, since the cardboard partitions were too weak.

Another carlot shipment was made a week later. This arrived also in 14 days. The six-basket crates arrived in a sound condition and the prices ranged from $4.08 to $4.26 per crate.

With careful handling, there promises to be opportunity for developing considerable export trade in England for peaches. The English market takes thousands of boxes of South African peaches during the winter months. The summer season should be better for peach consumption than the winter season. The South African fruit is en route about three weeks. Hence, there should be a good opportunity to develop trade for American peaches. An obstacle lies in the fact that the British prefer white-fleshed varieties and regard the peach as a luxury. Consequently, great discrimination and care will be necessary on the part of American growers if they are to develop this market.

DR. JOHN HARVEY KELLOGG, of the Battle Creek (Michigan) Sanitarium, recognized as one of the greatest authorities on matters of diet, paid some very high tributes to the apple in a recent lecture. He believes that everybody should eat at least six apples a day. "I will not hesitate to say," declared Dr. Kellogg, "that in my opinion a widespread campaign for the promotion of the dietetic use of apples and fresh fruit juice will contribute very greatly to the health of the American people.

"If people generally ate six apples a day it is probable a good many doctors would have to abandon their profession.

"An apple between breakfast and dinner, another in the afternoon and another at bedtime are an excellent remedy for constipation and render material assistance to badly crippled colons which require more vigorous colon stimulants, such as bran, roughage, mineral oil, etc.

"Most headaches are due to intestinal toxemia, the result of an inactive colon. Apples at mealtime, between meal times and at bedtime serve in many cases as an excellent laxative, this making an end to headaches by removing the cause."—*The Packer.*

THE OREGON walnut crop is quite promising this year. The harvest began about September 15. Total production is estimated at about 1,000,000 pounds. There is a fairly strong advance demand for the product at quite satisfactory prices.

THE APPLE harvest in the Spokane district opened up about 10 days earlier than usual this year. The crop promises to be heavier than last year. The principal varieties are Rome Beauties, Jonathans, Winter Bananas and Delicious.

A carload of pears from the Wenatchee district was recently shipped to Hanghow, China, which is 850 miles up the Yang-tse Kiang River. This is believed to be the first shipment of pears ever made to the interior of China.

A solid train of apples from all parts of north central Washington was recently made up at Wenatchee and was rolled to St. Paul, from where the cars were distributed to different markets. Daily apple trains are now being moved from this section, and in a very short time several trains will be made up every day, according to L. W. Mickel, Great Northern fruit agent. On September 10, 544 cars of apples, 569 cars of pears, 251 cars of mixed fruit and 128 cars of cherries had been shipped from the Wenatchee district.

DR. G. F. WARREN, economist of Cornell University, presented the following figures at the annual meeting of the New York State Horticultural Society showing the apple production for the United States and the consumption per capita since 1900:

Year	Population	Apples	Bu. per Capita
1900	75,400,000	184,300,000	2.44
1910	91,500,000	167,000,000	1.83
1920	105,700,000	181,200,000	1.71
1925	114,300,000	179,100,000	1.57

"SUMMARY of Northwestern Carlot Shipments of Fruits and Vegetables, Year 1925," is the title of a mimeographed summary issued by the Bureau of Agricultural Economics. The author is Mrs. L. B. Gerry. The summary gives the 1925 carlot shipments of fruits and vegetables from shipping points in Washington, Oregon, Idaho and Montana. The shipments are tabulated by products, by stations and by months. Copies may be obtained from the Federal Bureau of Agricultural Economics, Fruits and Vegetables Division, 424 Federal Building, Spokane, Wash.

ACCORDING to a recent report of the United States Bureau of Commerce, the exports of various canned fruits during the last three years were as follows:

EXPORTS OF CANNED FRUITS FROM THE UNITED STATES

Fruits.	1923. Pounds.	1924. Pounds.	1925. Pounds.
Apples and apple sauce	(1)	14,581,453	12,358,105
Apricots	25,771,246	37,202,523	33,403,136
Cherries	1,465,702	1,794,006	1,695,188
Prunes	(1)	2,485,067	2,881,538
Peaches	40,244,591	65,851,366	84,749,086
Pears	40,553,353	59,122,987	69,457,983
Pineapples	17,414,173	28,501,951	36,267,834
Plums	1,522,434	1,314,682	2,715,633
Other	20,604,876	13,458,813	19,831,572

(1) Not separated.

These fruits were, of course, shipped to various countries. The percentages are not available showing the distribution of apple shipments, but the percentages of other fruits shipped to different countries were as follows:

Cherries.—Canada, 13.6; United Kingdom, 9.8; Philippine Islands, 7.4; Mexico, 6.1; Panama, 2.7.

Peaches.—United Kingdom, 82; Canada, 4.7; Cuba, 3.8; France, 2.1; New Zealand, one.

Pears.—United Kingdom, 90; Cuba, 3.7; Canada, 1.1; France, 0.6; Netherlands, 0.5.

Pineapples.—United Kingdom, 43.3; Germany, 16.3; Canada, 10.4; France, 9.9; Netherlands, four.

Apricots.—United Kingdom, 86.6; France, 3.6; Canada, 3.3; Belgium, 0.9; Netherlands, 0.8.

Plums.—United Kingdom, 73; Canada, 5.8; France, 2.3; Netherlands, 1.5; Cuba, 1.2.

Other.—United Kingdom, 71.7; Canada, 2.8; Cuba, 1.4; Philippine Islands, one; Japan, 0.6.

THE EXPORTS of dried fruits of different kinds for the last three years were as follows, according to a recent report of the United States Bureau of Commerce:

UNITED STATES EXPORTS OF DRIED FRUITS, 1923–25

Fruits.	1923. Pounds.	1924. Pounds.	1925. Pounds.
Raisins	77,814,000	92,139,672	125,923,926
Apples	16,707,165	29,740,472	22,720,824
Apricots	20,169,265	30,456,243	20,160,775
Peaches	4,655,852	12,551,867	4,412,232
Prunes	59,103,757	220,911,703	146,484,934
Other dried fruits	12,206,268	13,150,339	12,005,645
Total	190,656,307	398,950,296	331,708,336

The same report shows that the shipments in pounds of all dried fruits to various countries were as follows:

UNITED STATES EXPORTS OF ALL CLASSES OF DRIED FRUITS, BY COUNTRIES

(In thousands of pounds.)

Countries.	1923	1924.	1925.
United Kingdom	47,158	68,365	86,071
Canada	53,056	61,986	52,232
France	5,157	19,696	41,068
Germany	8,557	126,581	50,709
Netherlands	17,458	43,831	33,321
Sweden	10,244	14,662	11,304
Denmark	9,891	12,857	10,328
Belgium	5,061	7,267	8,180
Other countries	84,075	43,705	38,495
Total	190,656	398,950	331,708

The percentages of the various fruits shipped to the leading export markets were as follows:

Raisins.—United Kingdom, 34.6; Canada, 24.3; Germany, 11.7; Netherlands, 9.7; New Zealand, 3.9.

Apples.—Germany, 36.6; Netherlands, 29.9; Sweden, 8.4; United Kingdom, 6.6; Denmark, 3.9.

Apricots.—Germany, 23.9; Netherlands, 20.9; United Kingdom, 16.4; Denmark, 7.9; Canada, 6.9.

Peaches.—Canada, 46.9; Germany, 12.2; United Kingdom, 10.9; France, 4.9; Argentina, 4.1.

Prunes.—France, 26.2; United Kingdom, 23.3; Germany, 14.1; Canada, 11.3; Netherlands, 6.3.

Other dried fruits.—United Kingdom, 25; Sweden, 22.5; Germany, 14.2; Canada, 11.7; Netherlands, 6.7.

THE SEPTEMBER 1 crop estimate of the United States Department of Agriculture indicates that the commercial apple crop of the country is to be 42,100,000 barrels as compared with 39,600,000 barrels estimated on August 1, and a five-year average production of 30,100,000 barrels.

The total apple crop was estimated on September 1 at 242,000,000 bushels as compared with 219,000,000 estimated on August 1 and a five-year average production of 170,000,000 bushels.

Favorable weather during the month caused the apple estimates to be raised for most of the important apple producing states.

The peach crop of the country was estimated on September 1 at 65,600,000 bushels as compared with 63,600,000 on August 1 and a five-year average production of 46,900,000 bushels.

The pear crop on September 1 was placed at 25,100,000 as compared with 25,100,000 on August 1 and a five-year average production of 17,700,000 bushels.

The grape crop was estimated on September 1 at 2,400,000 tons as compared with 2,440,000 tons on August 1 and a five-year average production of 2,010,000 tons.

WITH the idea of interesting Wenatchee growers in advertising Wenatchee apples, the Wenatchee, Wash., Advertising Club has adopted the slogan "Wenatchee—Apple Capital of the World." The club is now seeking to develop an emblem which will blend with the slogan.

The advertising club has also organized a dummy corporation called "Apples—Inc." Through this organization it is hoped to sell the Wenatchee growers on the idea of an extensive advertising campaign to educate the people in America and elsewhere on the proposition that "the apple is still the king of fruits." An apple products campaign is being organized in which prizes will be offered for the best recipes for cooking, etc.

TOTAL shipments of apples of the 1925 crop from the Wenatchee district amounted to about 16,983 cars, according to Bert Baker, secretary of the Wenatchee Valley Traffic Association. This figure includes 817 cars of culls.

Great Quantities of Containers Manufactured

THE MARKETING of the fruit and vegetable crop of the United States requires the use of tremendous quantities of baskets, crates, hampers and berry boxes. The quantities necessary are shown by a recent survey made by the United States Department of Agriculture.

The production of berry boxes alone in 102 factories last year was in excess of 378,000,000 containers. Production of till baskets in 71 factories reached 167,000,000 containers and of climax baskets 65 factories manufactured 26,000,000.

Seventy-three factories reported aggregate production of 32,000,000 round stave baskets; 74 factories made 26,000,000 hampers; 50 factories made 15,000,000 market baskets; 65 factories made 26,000,000 boxes; and 186 factories made 6,000,000 berry crates and 58,000,000 vegetable and citrus crates.

The figures included in the report on carry-over of containers reflect to some extent growing conditions during the past year. For example, the unfavorable conditions in berry growing sections are shown by a carry-over of 21 per cent of the boxes manufactured. Similar conditions in grape growing sections are reflected in a carry-over of 27 per cent. Such carry-overs are expensive to manufacturers.

The compilation of carry-over figures during a period of years, say the investigators, would furnish a picture of the normal consumption of containers throughout the country, and would thereby enable manufacturers to gauge the probable demand in their sections. This would insure an adequate supply of packages, and at the same time guard against overproduction.

It is hoped that publication of the report will help to arouse interest among manufacturers in the collection of trade statistics and lead them to activities of their own along that line so that they may better serve their customers and protect themselves.

The Department of Agriculture is charged with enforcement of the United States Standard Containers Act, and periodically inspects container factories to assist manufacturers in complying with the law as to uniformity of containers. Thousands of sample containers are tested annually in the laboratory for dimensions and capacity.

Avocados Need Cross Fertilization

INVESTIGATIONS carried on by the Department of Agriculture in co-operation with the New York Botanical Gardens indicate that self-fertilization occurs to a limited extent in the avocado. It appears that some varieties of this fruit bear flowers which open in the morning only. Other varieties have flowers which open only in the afternoon.

In order to insure the best results, varieties should be interplanted with each other which bloom during the same part of the day. The Department of Agriculture states that 100 varieties of avocado have been studied in California and Florida as to their flowering habits and that about 50 per cent fall into each of the two classes described above. Little is known as yet concerning the best combination of varieties to use, but studies are now being made of this matter.

Very Sympathetic

Teacher—If there are any dumbbells in this room, please stand up.

A pause, then finally Johnny stood up.

Teacher—What, do you consider yourself a dumbbell?

Johnny—Well, not exactly that, teacher, but I hate to see you standing all alone!

THE SUCCESS of the Hood River section of Oregon, which is described on page five of this issue, is due largely, no doubt, to the Apple Growers' Association of Hood River. This co-operative was organized in 1913, when the organization took over the affairs of the Apple Growers' Union and the warehouse of the Davis Fruit Company. The association now controls between 65 and 75 per cent of the output of the section. During 1924-25 it handled products valued at about $4,000,000 and supplies worth about $750,000. It operates over the entire Hood River district, which is three to four miles wide and 15 to 18 miles long. Because of the compactness of the territory, there are no local associations, and all property is owned by the association. The organization has a large cold storage plant at Hood River and several others at strategic points in the valley.

The association has about 1000 members, about 800 of whom are active. It is organized on a non-profit plan. Continuous contracts containing a one-year withdrawal privilege are used. Growers who cancel their contracts lose their interest in the property of the association.

The co-operative has charge of all inspection and standardization of products. Fruit is inspected several times in the orchard during the growing period, as well as during the harvesting and packing season. Packing houses are in some cases owned by large individual growers, and in others they are owned and operated on a community basis.

The association is well equipped with cold storage plants, and this enables the officers to market products under favorable conditions. The plant at the association headquarters at Hood River will hold 450,000 boxes. A new plant recently built at Odell holds 98,000 boxes and cost $150,000.

The association has maintained a paid representative in New York for several years, but the New York office has been discontinued recently. The association is operating through brokers, who are selected very carefully.

The officers are: R. J. McIsaac, president; John Moore, vice-president; Arvo Hukari, secretary; C. H. Stetton, treasurer; A. F. S. Steele, general manager; William Irwin, sales manager; and A. G. Lewis, purchasing agent.

THE OREGON Walnut Exchange, Inc., located at Dundee, Ore., is the principal factor in the handling of Oregon walnuts, the production of which is increasing rapidly in the state. The first plantings were made in the state between 1895 and 1900 by Thomas Prince. New groves are coming into bearing annually. The exchange handles 75 per cent of the output, which this year will amount to about 20 cars. The Oregon walnuts have very white and plump kernels and the product is of such quality that leaders believe there is an excellent future for the industry. The largest plantings are around Dundee, near which point the first plantings were made.

The exchange has seven locals, all of which have packing plants. The best of these is located at Dundee. This plant will handle 10 tons a day and is said to be the best equipped plant north of San Francisco. The nuts are dried in grower-owned plants as soon as picked, following which they are turned over to the associations for grading and packing in accordance with association standards.

Any grower or group of growers who has sufficient output to ship in carlots may constitute a local unit. Each unit has one vote in the central association. The central and the locals are organized on the non-stock plan. The revolving plan of financing is used. Some of the locals have been in operation six years, and the central has been organized for two years. Growers received 22 cents a pound for the 1925 crop.

The manager of the exchange is W. H. Bentley, who formerly lived in southern California. He operates a grove of his own near Dundee and receives $500 a year for managing the association. He seems to be doing a good job at small expense to the growers, a matter which they should thoroughly appreciate.

THE BERRY Growers' Packing Company of Gresham, Ore., handled 2,530,304 pounds of fruit during 1925. Red raspberries constituted 59 per cent of the fruit. The remainder included Loganberries, strawberries, blackberries, cherries, pears, black raspberries, gooseberries, currants and prunes. Large quantities of the berries were barreled and frozen.

The association paid $220,841 to growers, which amount includes a few items from the 1924 crop. Expenses amounted to $20,482 and earnings to $6408.

A number of members sold products outside the organization to the amount of 118,565 pounds, and penalties on this to the amount of $676 were paid to the association. Fruit is handled for non-members as well as members. The membership increased 25 per cent during 1925.

THE SPRINGBROOK Packing Company, located at Springbrook, Ore., is a co-operative canning plant which has been operating since 1903. It has 200 members. Last year it did a business amounting to $156,000, and its officers claim that the members received $15,000 more than they would have received outside the association.

The territory around Springbrook produces more blackcap raspberries than any community in the Northwest. Large quantities of other small fruits, cherries and pears, are also produced. Practically all of the fruits produced in the community are handled by the Springbrook Packing Company and other canning and drying co-operatives in the vicinity.

A NEW bulletin on "Management Problems of Co-operative Associations Marketing Fruits and Vegetables" is available from the Department of Agriculture. Among the more important subjects discussed are control of delivery, inefficient sales service, retailing methods and margins, membership control, contracts, by-laws, accounting records, pooling methods of sale, advertising and functions of a co-operative association. Charts and pictures supplement the text. Interested persons should write to the Department of Agriculture, Washington, D. C., for Bulletin 1414D.

THE AMERICAN Cranberry Exchange has spent $972,038 for advertising since 1916. Better prices have been received since the advertising campaign was entered into than before. The average price per barrel for the five years 1912-16 in-

clusive was $5.94 and the average price during 1921-25 inclusive was $10.37. The output increased four per cent and the price per barrel about 75 per cent during the interval.

About 40 per cent of the advertising expenditures were used for newspaper advertising and about 30 per cent for national magazine advertising. The remainder was used for retail service and miscellaneous advertising.

The crop of 1925 was the nineteenth marketed by the organization. During the 19 years, nearly 5,000,000 barrels of cranberries have been sold co-operatively. The annual volume of business has varied from 110,000 barrels in 1908-09 to 390,000 barrels in 1923-24. The proportion of the crop east of the Rocky Mountains handled co-operatively has increased from 34 per cent in 1907-08 to 66 per cent for the years 1921, 1922 and 1924.

GROSS sales by the Western New York Fruit Growers' Co-operative Packing Association, Inc., Rochester, N. Y., for the year ending May 31, 1926, were $610,729 as compared with $607,913 for 1924-25 and $779,600 for 1923-24. The good showing for 1926 is commendable in view of the difficulties which this organization went through a year or more ago.

Fruits were the principal products handled during 1925-26, although small quantities of cabbage and onions were also marketed. The association serves 30 member units and exercises control over the standardization of products in addition to furnishing accounting and sales service.

THE DISTRICT Court of Appeals of California recently decided the case of the California Prune and Apricot Growers, Inc., versus Baker et al. in favor of the organization. The association brought suit to recover liquidated damages resulting from the failure of the defendants to deliver prunes in accordance with their contracts.

THE CALIFORNIA Walnut Growers' Association has a display of nuts of various grades at the sesquicentennial exposition at Philadelphia. It is also exhibiting one of the machines being used for individually stamping walnuts with the Diamond brand. The machine will stamp 2000 walnuts a minute.

The exhibit is being conducted as part of the general plan to familiarize consumers with the Diamond trademark and to bring walnuts to their attention.

AN ORGANIZATION known as the Pacific Northwest Boxed Apples, Inc., has been formed for bringing to the attention of the public the boxed apples of that section. Apple production is increasing and the per capita consumption is decreasing. It appears that apples are being forced out of the dietary of the American public by the advertising campaigns being carried on in behalf of other fruits.

The organization is capitalized for $25,000 in $1 shares. To meet legal requirements, its stock must all be subscribed. The stock has been allotted to several districts on the basis of tonnage, where it is now being subscribed to by the shippers of each district. The shippers will further distribute the stock to growers for whom they handle fruit. Ten thousand shares were allotted to the Wenatchee district, 10,000 to the Yakima district, 3800 to the Hood River section and the remainder to smaller districts.

A deduction of one-half cent a box is to be made on all apples marketed during the 1926-27 season and one cent a box is to be deducted for the remainder of the five-year period, for which contracts are being signed. The money is to be used solely for advertising purposes, while the capital stock subscriptions will be utilized for working capital. A sound organization will be built before extensive advertising is conducted. The northwestern leaders hope to bring the apple back to a position of popularity so far as their product is concerned.

The officers of the organization are: president, J. W. Hebert, Yakima, Wash.; vice-presidents, N. W. Maggutt, Wenatchee, Wash.; A. F. S. Steele, Hood River, Ore.; and F. M. Shields, Walla Walla, Wash.; treasurer, E. M. Gillette, Wenatchee, Wash.; and secretary, Thomas B. Hill, Seattle, Wash. The executive committee is made up of David Gellatly, Wenatchee, Wash.; C. M. Holsinger, Yakima, Wash.; J. W. Hebert and A. F. S. Steele.

THE HUBBARD Co-operative Fruit Growers' Association of Hubbard, Ore., has been making a steady, consistent growth during its three years of operation. In 1924, its first season, it handled 90 tons of fruit and returned $10,615.55 to growers. In 1925 it handled 183 tons and paid $20,713.41 to its members. In 1926 it handled 376 tons of fruit and returned to its growers the sum of $43,200.

THE YAKIMA Fruit Growers' Association handled 526 cars of soft fruit between August 1 and 24. The most fruit handled in any one day was 55 cars, which amount was loaded out on August 12. During the seven-day period between August 11 and 17, inclusive, the association shipped 243 cars of fruit. The Sawyer plant shipped an average of more than 10 cars a day for nearly two weeks.

A total of 205 new contracts have been signed up by the field department since January 1, bringing in 1996 acres of fruit. The tonnage of the organization is now estimated at 3465 cars for the season.

On August 30 and 31, the Big Y cold storage plant at Zillah burned down. This plant had a capacity of about 600 cars. The burning of the plant, however, will not cripple the work of the association, since ample storage space has already been engaged to take care of the products. The only difficulty is that some growers will be obliged to haul their fruits farther as a result of the fire.

A TOTAL of 824 co-operative associations have reported to the Department of Agriculture for both 1913 and 1925. The amount of business conducted by these organizations was $81,647,000 in 1913 and $164,284,000 in 1925. The volume of business, therefore, has increased over 100 per cent in 12 years. This increase is due partly to increased membership, partly to increased business per member, and partly to a higher price level in 1925 than in 1913.

The average amount of business per association increased from $99,086 in 1913 to $199,373 in 1925.

Preliminary Report on 1925 Census

A PRELIMINARY announcement of the 1925 census by the Department of Commerce gives the following information pertaining to the fruit industry:

STATISTICS FOR IMPORTANT FRUITS
1919 and 1924.

	1924.	1919.
Apples—		
Trees, young....	36,400,092	36,195,085
Bearing age.....	104,342,584	115,309,165
Bushels	153,634,293	136,560,997
Peaches—		
Trees, all ages..	91,863,981	87,263,963
Bushels	50,982,073	50,686,082
Pears—		
Trees, all ages..	25,330,288	20,699,659
Plums and Prunes—		
Trees, all ages..	39,497,615	29,827,561
Grapes—		
Vines, all ages..	381,738,396	253,148,754
Oranges—		
Trees, young....	8,804,064	5,196,972
Bearing age.....	21,999,686	14,397,836
Lemons—		
Trees, young....	372,289	813,361
Bearing age.....	3,351,313	2,921,608
Grapefruit—		
Trees, young....	1,639,450	1,135,024
Bearing age.....	3,567,518	1,938,453
Pecans—		
Trees, young....	5,120,016	2,257,288
Bearing age.....	4,618,297	2,672,191

These figures show that during the last five years:

1. The number of young apple trees has remained about stationary and the number of bearing apple trees has decreased about 10 per cent.

2. A small increase has taken place in the number of peach trees of all ages.

3. There has been an increase of about 25 per cent in the number of pear trees of all ages.

4. An increase of about 33⅓ per cent has occurred in the number of plum and prune trees of all ages.

5. The number of grapevines has increased about 50 per cent.

6. The number of orange trees, young and bearing, has increased about 50 per cent.

7. The number of young lemon trees has decreased over 50 per cent, and the number of bearing trees has increased about 14 per cent.

8. The number of young grapefruit trees has increased about 50 per cent and the number of bearing trees almost 100 per cent.

9. The number of young pecan trees has more than doubled and the number of bearing trees has increased about 80 per cent.

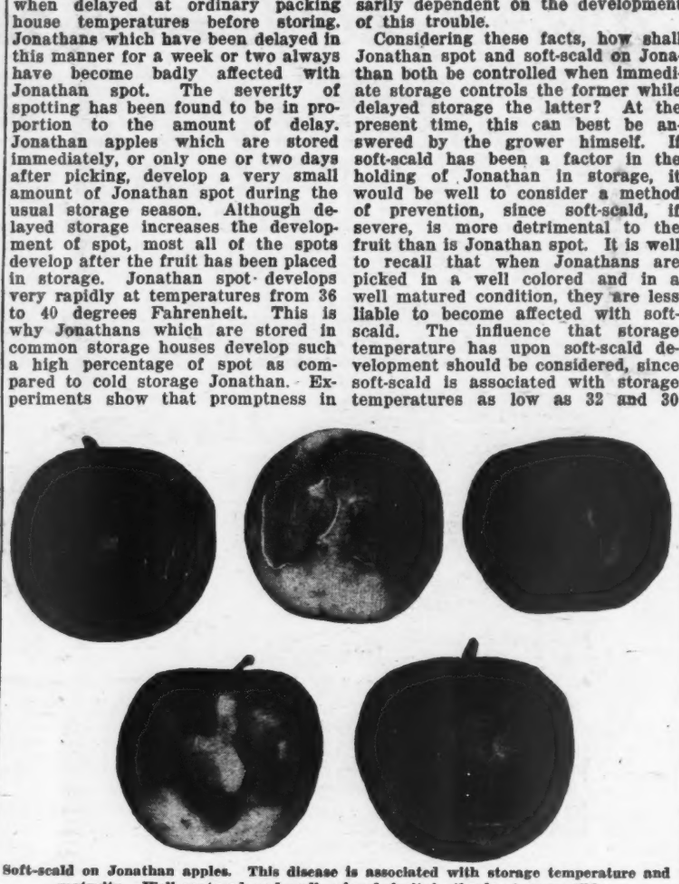
Prevention of Storage Disorders in Apples

(*Continued from page 3*)

fruit with very little delay, if any, after picking. It has been pointed out that apples become soft very rapidly when delayed at ordinary packing house temperatures before storing. Jonathans which have been delayed in this manner for a week or two always have become badly affected with Jonathan spot. The severity of spotting has been found to be in proportion to the amount of delay. Jonathan apples which are stored immediately, or only one or two days after picking, develop a very small amount of Jonathan spot during the usual storage season. Although delayed storage increases the development of spot, most all of the spots develop after the fruit has been placed in storage. Jonathan spot develops very rapidly at temperatures from 36 to 40 degrees Fahrenheit. This is why Jonathans which are stored in common storage houses develop such a high percentage of spot as compared to cold storage Jonathan. Experiments show that promptness in storing has proved to be the most practical way to control Jonathan spot.

The severity of Jonathan spot increases throughout the storage period. Jonathan apples in February have always shown more spot development than did the same fruit in December or in January. The length of the storage period for Jonathan is necessarily dependent on the development of this trouble.

Considering these facts, how shall Jonathan spot and soft-scald on Jonathan both be controlled when immediate storage controls the former while delayed storage the latter? At the present time, this can best be answered by the grower himself. If soft-scald has been a factor in the holding of Jonathan in storage, it would be well to consider a method of prevention, since soft-scald, if severe, is more detrimental to the fruit than is Jonathan spot. It is well to recall that when Jonathans are picked in a well colored and in a well matured condition, they are less liable to become affected with soft-scald. The influence that storage temperature has upon soft-scald development should be considered, since soft-scald is associated with storage temperatures as low as 32 and 30 degrees. Freezing injury which occurs at temperatures below 30 degrees Fahrenheit is sometimes confused with soft-scald. However, to one familiar with the two troubles, there is no trouble in distinguishing between the two.



Soft-scald on Jonathan apples. This disease is associated with storage temperature and maturity. Well matured and well colored fruit is the least susceptible

How I Built an Air-Cooled Storage Plant

(*Continued from page 8*)

and cold by conduction, radiation and convection. In my storage plant, I used for the side walls, cinder cement blocks plus furring strips, waterproof paper and Celotex. The latter is made from the refuse from sugar cane mills in the South. A line of solid cinder cement blocks was laid every 32 inches in the wall to break up convection currents which might occur in the long vertical air spaces of the hollow blocks. For ceiling insulation I used a combination made of wood pulp, plaster, waterproof paper, flaxlinum, eight inches of dead air space, Celotex, waterproof paper and matched flooring.

Humidity from Earthen Floor

I provided for humidity by using a dirt floor over which was laid two by four cypress, treated with a waterproof paint, and floored with one by 12 pine boards, spaced one and three-fourths inches apart.

Four cold air intakes were constructed at the ground level on each of the two sides of the building, and four outlets were provided at well distributed intervals at the top of the building. The cold air intake capacity was figured at one square foot for each 700 cubic feet of capacity, and the outlet capacity was figured at slightly more than one-half the area of the cold air intakes.

A grading and packing room is provided in the front of the building, and this serves as a display and sales room after these operations have been completed. Adjoining this room is an office, which I think is a necessary equipment for any orchardist who desires to conduct his transactions and keep his records in a businesslike manner.

Storage Room Separated by Cinder Block Wall

The storage room proper is partitioned off from the packing and sales room by a cinder cement block wall. Entrance is made through two insulated doors. A garage in the rear of the storage room accommodates four motor trucks and a hydraulic cider press. It is here that all the off-grade apples are converted into sweet cider. This product helps to make the place popular, and it provides a means for turning the unsalable apples into a profitable side line. From one to two barrels of cider are sold each day at the plant. Most of it is sold in gallon lots. Beneath the sales room and office is a root cellar, which also is provided with adequate means for controlling the temperature, humidity and air circulation. Air-cooled storages are common in the more northern states, and in my opinion they will be used more generally in a few years than at present.

Fertilizer Pays in New Hampshire Orchards

FERTILIZER in addition to the cultivation of orchards may become profitable after 15 or 20 years of use, according to the latest reports of the long-time apple experiments conducted at the Woodman orchard by the New Hampshire Agricultural Experiment Station.

The first 10 years of the experiment, which compares various methods of cultivation, cover crops and fertilizers, did not show sufficient returns from the use of fertilizer to justify the expense.

However, according to G. F. Potter and S. W. Wentworth, station horticulturists, at the end of the seventeenth year of the experiment, the fertilized trees have reached an increase in size and yields which now makes it a question as to whether they are not sufficiently more valuable than the others to have paid for the extra cost.

The plan of this experiment, which was begun a number of years ago, is such that it is impossible to tell with certainty whether the results obtained are due to nitrogen or to the phosphate and potash. However, the plot which receives extra nitrogen in addition to the complete fertilizer has for the past seven years given an average annual yield per tree of 63 pounds more than that of any other plot. Plots receiving additional phosphorus or potash show no additional growth or yield.

"It is quite probable that a very large per cent of the increased growth and yield on the fertilized plots is due solely to the nitrogen in the fertilizers," says Prof. Potter. "If this is true, there can be no question that the returns are ample to pay a profit on the cost of this element."

An Adjustable Safety Stepladder that Anyone Can Make

By J. Marshall Porter

ORDINARY stepladders are reasonably safe when they are being used on a perfectly smooth and level surface, but when they are being used to pick apples or other fruit on a hillside orchard, or for other outdoor work, they are very dangerous.

Anyone can make an adjustable safety ladder from an ordinary stepladder by placing two clips on each leg of the ladder. These clips may be made from light strap iron. Select three pieces of strong, tough wood for the sliding legs. Bore holes every few inches so the legs may be adjusted to keep the ladder standing level on uneven ground. A bolt may be used to slip into the clip and through the legs. The ground ends of the legs should be cut wedge shaped so as to hold firmly to the ground.

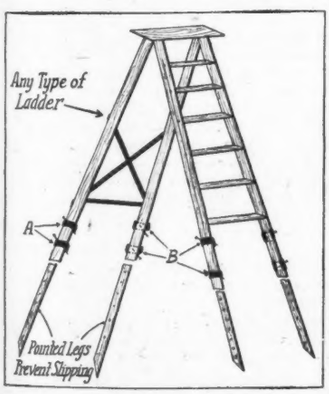


Diagram of a stepladder adapted for hilly land

Sulphuring of Apricots

By R. S. Hiltner

AS FORECAST last year, the Ministry of Health of Great Britain has announced a decision, prohibiting in the United Kingdom the sale of dried fruit with excessive amounts of sulphur dioxide. More than 2000 parts per million (two-tenths of one per cent) will not be tolerated. Such restrictive regulations impose a serious obligation on every producer of dried apricots. His own self interests as well as his duty to the industry require that he conform to the regulations. Unless the sulphur content of the fruit be kept within bounds, the marketing of the crop cannot be assured.

In the curing of fruit, the sulphuring should be adequate but not excessive. Nothing worth while is gained by over-dosages of sulphur, either in improvement of color or keeping quality. A large proportion of the sulphur burned, according to the usual practice, is utterly wasted, mostly through leaks in the sulphur houses and the rest by over-saturation of the fruit. Probably, the most important item of equipment for controlling the sulphuring is a well-built sulphur house that can be tightly closed to prevent leakage of the sulphur smoke. The house should be located where it will be exposed to the heat of the sun throughout the day. Moderate heat is a valuable aid in the sulphuring process. A heavy coating of black paint, applied inside and outside of the sulphur houses, serves the triple purpose of absorbing heat, of protecting the buildings and of stopping small cracks and leaks. Tar paint or other material that will taint the fruit must be avoided.—*Sunsweet Standard.*

Combat Thievery In New York

THIEVERY of food products on New York farms has become so great that steps are being taken to meet the situation. The New York Farm Bureau Federation is furnishing signs to its members at 10 cents each (for five or more) for posting in conspicuous places. These signs state that $25 will be paid by the federation for information leading to the conviction of persons guilty of larceny and $10 in cases of petty larceny.

Information of this campaign is being spread to the people of the state through newspaper publicity and announcements at various meetings, including those of Rotary and Kiwanis clubs.

Apples for Health, Inc.

APPLES for Health, Inc., is the name of a new organization that was formed at Chicago on September 9 and 10 during the conference that was called by the American Pomological Society. The purpose of the organization will be to promote increased consumption of apples.

A membership fee of $2 per year will be charged. In addition to the money thus raised growers are to be urged to authorize their dealers to deduct one-half cent a bushel from the proceeds and turn the amounts over to Apples for Health, Inc. Dealers are to be asked to contribute 50 cents for each car of apples handled. Voluntary contributions are also being requested with which to meet preliminary expenses.

All membership fees and contributions should be sent to Robert W. Dunn, secretary, 10 South La Salle Street, Chicago.

"You say," said the barrister, "that you saw the quarrel between the defendant and his wife?"

"I did," answered the witness.

"What did the defendant seem to be doing?"

"He was doing the listening."—*Tit-Bits.*

"Is this the road to Meadville?" inquired the tourist.

"Yaas," drawled the farmer. "'Tis if you're intendin' to circle the globe. But if you turn around, it's 24,998 miles nearer."

Selecting and Exhibiting Fresh Fruit

By F. W. Allen
University of California

THE TIME of the country fair is at hand and doubtless many enterprising growers are looking through the premium lists with the thought in mind of showing some of their products. The writer has always been interested in a good exhibit, especially if the products shown grew in the orchard or garden, and when judging fruit exhibits has often regretted that apparently there were not enough ribbons to go around.

The amateur exhibitor must learn that selecting and exhibiting fruit and vegetable products is quite an art which, in part at least, must be learned from experience; also, that a good judge does not place the ribbons arbitrarily but only after comparing the different entries as to the points of their superiority. But in judging such products, what are the points which count? What does the judge look for?

A spacious and well arranged fruit exhibition hall

Quality

Specimens for exhibit are naturally supposed to possess special merit. They must be of outstanding quality, at least insofar as this term relates to condition and freedom from blemishes. Condition refers primarily to the degree of ripeness. Soft, overripe fruit cannot compete with that in perfect eating condition. However, early maturing varieties, unless held in cold storage, will always appear somewhat past their prime when not shown until mid or late summer. Any specimens showing bruises, twig or stem punctures, loss of stem or any indication of disease or insect injury will be scored off one or more points under the heading of "blemishes." Look very carefully for these defects, as condition and blemishes will count about 25 per cent of a perfect score.

Size

If the premium is for a specimen or collection of specimens of largest size, size will win. If, however, the premium list calls for the best plate of pears, the best box of peaches, or the best head of cabbage, do not place too much importance on size. Specimens chosen should as a rule be slightly above the average size for well grown fruit, but over-grown specimens should not be selected. The fruit trade does not demand Jumbo pears, peaches as large as cantaloupes, nor cabbage of sufficient size that a single head would supply the season's need of the most ardent lover of kraut. Size usually counts from 15 to 20 per cent.

Color

Whether the fruit be on display at a show or in a store window, high color is always attractive. Striped, blushed or fruits normally of a solid red, purple or blue color, should show this characteristic as fully developed as possible. Late maturing fruits or varieties will, of course, be expected to show little if any color. Yellow fruits should possess a clear, attractive color characteristic of the variety. Color is fully as important with deciduous fruits as is size.

Form or Shape

The general shape should be the normal or characteristic type for the variety as grown in the local district. Form is generally given about 10 points out of a 100.

Uniformity

While listed last, uniformity is certainly not least. Specimens on a plate or in a box may possess all of the other points to a considerable degree and yet if one or two fruits are off-shape, poor color or under-sized, the lack of uniformity may allow another lot which on the average is of lower grade to win. Careful selection with reference to uniformity, size, shape, color and condition is of primary importance. Have each specimen in a lot or package as near like every other specimen as they can be selected.

Since the value of standardization is now being recognized in commercial shipments, it is even of greater importance in exhibiting for prizes. On the score card it counts about 20 points.

In order to secure a prize winning sample of fruit or a lot of vegetables, the first selection should be made in the orchard or field. Mark certain trees, branches or plants possessing superior fruit. At the time of the fair or at the regular harvesting time where this is previous to the fair dates, collect an extra quantity of specimens in order that a more critical examination may be made in choosing the final sample for exhibit.

If close attention is given to the above points, one will at least have learned the fundamentals in selection. In addition, however, to choosing the sample of fruit itself, the exhibitor should secure and carefully read the fair announcement, and be sure to comply with the rules for exhibiting. Entries must be made and the displays in place by a certain time. Certain classes call for a definite number of specimens and these are exhibited in a uniform manner. The name of each variety should be properly placed on a card usually furnished for each entry. The grower's name should not appear until after the ribbons are placed. A special display card may then be shown as an advertising feature.

Special Community Exhibits

Within recent years a special feature of county or community fairs has been the special exhibits of different farm centers within the community. The purposes of these have been to show the best and largest collection of products grown in that community or to portray and emphasize some special activity of interest. The latter type of exhibit is somewhat more novel and adds a very special interest to small fairs. Such exhibits require a great deal of effort upon the part of a few who always carry the greater part of the responsibility, but they also require the hearty co-operation of all the growers.

In actually staging the display, a small committee is usually chosen, each member being selected on account of some definite qualification which he or she possesses. One or more members of the committee should be in charge of collecting the material, another member in charge of its arrangement, and perhaps a third to look after the general decorations and artistic features of the display.

Where the exhibits are to emphasize the various products which are grown in a community, each grower has a very responsible part in advising the committee as to what products he can contribute. General plans for the exhibit and what material is available might well be discussed at one or more of the farm center meetings.

While there is no general rule as to the methods for judging such exhibits, it is quite customary to allow from 50 to 60 points for the quality of products shown, and about 20 points each for the variety of products and their general arrangement. Quality is given fully one-half of the score because it is felt that an inferior grade of fruit, whether at a fair or on the market, is not to be desired. General exhibits should, of course, contain as large a collection or variety of products as can be assembled without sacrificing quality. The general attractiveness of the display will depend very largely upon the way in which the products are arranged and the supplementary decorations.

Assuming the factors of quality and variety to be the same, the display which attracts the eye at first glance is the one most apt to finally secure the prize.

Insects in Stored Apples

LATE summer insects sometimes escape the notice of the fruit packer and are put in storage with apparently sound fruit where later they may develop and do much damage, say the entomologists at the New York State Agricultural Experiment Station. The worst offenders in stored fruit are codling moth larvae, the lesser apple worm, San Jose scale, and apple maggots, which often continue their feeding and development in fruit which is supposedly sound.

Fortunately, the codling moth and apple maggot confine their efforts to a single apple, but the apple worm and the scale may pass from apple to apple, it is said. If the fruit can be placed in cold storage and held at a temperature just above the freezing point until ready for use, little if any injury will result from insects inadvertently carried over with the apples, declare the station specialists, although the insects are not usually killed by such temperatures. Low temperatures check growth and feeding, but infested apples never keep quite so well in storage as do sound apples.

A Rural Love Letter

Dear Sweet Patootie:

Where have you bean? Don't you carrot all for me? My heart beets faster when the sun shines on your radish hair and glints off your turnip nose. If you cantaloupe, lettuce marry. We will make a happy pear. Let's orange it that way.

Your sweet,
CORN ONNA COB.

Book Review

Marketing of Farm Products

"MARKETING of Farm Products" is the title of a new book written by A. H. Benton, head of the Department of Marketing and Rural Organization in the North Dakota Agricultural College. The book gives attention in the early chapters to the origin and development of our marketing systems. Following this there are chapters which discuss the marketing of each important class of agricultural products, as well as the organizations engaged in the marketing of these products. The closing chapters relate to the purchasing of farm supplies, marketing legislation, fundamentals of co-operative marketing and difficulties and dangers in co-operative marketing. The book contains a large amount of valuable and practical information for students of marketing as well as growers interested in this subject. It may be obtained from the A. W. Shaw Company, Cass, Huron and Erie Streets, Chicago, Ill., for $5.

Citrus Diseases and Their Control

THE NEW BOOK on "Citrus Diseases and Their Control" by Howard S. Fawcett and H. Atherton Lee is a valuable addition to the literature on citrus fruits. The industry has for some time needed a book that would bring together in authoritative fashion the numerous disconnected items of information about citrus diseases.

Dr. Fawcett, the senior author, is professor of plant pathology in the University of California. He was formerly connected with the Florida Experiment Station and is regarded as one of the best authorities on citrus diseases in the country. Mr. Lee, the junior author, has prepared the sections of the book pertaining to oriental citrus diseases.

The book is especially well arranged, well illustrated and well indexed. In attempting to treat the subject thoroughly, the authors found it advisable to include some information of a technical character. However, this is presented in clear language that any careful reader can understand.

The book may be obtained from the McGraw-Hill Book Company, 370 Seventh Avenue, New York City, for $5.

The Cultivation of Citrus Fruits

A NEW book on citrus culture has just appeared which is an important addition to horticultural literature. Its title is, "The Cultivation of Citrus Fruits," and the author is H. Harold Hume. Dr. Hume is recognized as an authority on citrus culture, not only in Florida and other sections of the Gulf Coast, but in the Southwest and in California as well. He was formerly an instructor and investigator at the Florida Agricultural Experiment Station. He has had an extensive experience in commercial culture of citrus fruits and is now president and manager of the Glen St. Mary Nurseries at Glen St. Mary, Fla., one of the largest citrus nurseries in the South.

The book is founded on the author's former book entitled, "Citrus Fruits and Their Culture," which has long been a standard book in its many editions. The new book is a thoroughly up-to-date treatment of citrus culture. It is profusely illustrated and treats all of the citrus fruits, including oranges, kumquats, grapefruit, lemons and others. Chapters are included on land and location, propagation, planting, tillage, fertilizing, pruning, spraying, harvesting, shipping and marketing. The botany of citrus fruits is also discussed in an able manner for persons interested in the more technical phases of citrus culture.

The book is printed by the Macmillan Company of New York and sells for $5.

New Book on Root Development

AGRICULTURE is rapidly becoming an enterprise in which highly developed methods must be employed. Nowadays we cannot achieve success by simply plowing the ground, planting the crops and giving them a little haphazard care until they reach maturity. Rather, we must understand a great deal about the nature of the plants we are growing and of the inner processes taking place within them. Successful fruit growers understand these things, and those who do not understand them are due to lose out sooner or later in the struggle for existence.

In this connection, a new book on "Root Development of Field Crops" is of interest. The author is John E. Weaver of the University of Nebraska, who has made a lifelong study of root action. The book treats the subject from the standpoint of practical application, and any careful reader who will study it will secure much good from it. While pertaining particularly to field crops, the principles involved apply also to tree and small fruits. The book can be purchased from the McGraw-Hill Book Company, 370 Seventh Avenue, New York, for $3.50.

Harvesting and Packing Grapes

"HARVESTING and Packing Grapes in California" is the title of a new bulletin just issued by the University of California, Berkeley, Calif. The authors are H. E. Jacob and J. R. Herman. The bulletin describes the best practices now in operation in California.

The Orchard Home Department

When You Build Your Home

By Mary Lee Adams

EVERY year a number of fruit growers are planning to build new homes or to improve old ones. If the outcome is not successful, the failure is often excused by saying that, of course, if there had been more to spend the effect would have been just that much better. We forget that many costly dwellings fairly set one's teeth on edge while an unpretentious cottage may delight the eye. Lack of taste disfigures more homes than lack of means.

Before building, intelligent people will set themselves to learn all they can by observation, by reading, by studying illustrations and by the application of common sense to the problem in hand. Innate good taste is a gift from the gods, but all may learn to avoid the more glaring expressions of bad taste.

Ever since the devil first whispered behind the leaves, "It is pretty but is it *art?*" home builders have puzzled over just what that annoying critic meant. Some laugh it off and say, "If it's pretty, it must be pleasing to the eye, and that's good enough for me."

A Safe Road to Follow

It would be good enough for everyone if it were only true. But it's not. A pretty thing that is pleasing to the eye in one place may be actually unpleasant to look at in another. Ill assorted objects produce the same painful effect as clashing colors or discordant sounds.

I believe the safest rule to lay down when we plan to build or furnish, is *don't attempt too much.* Unless money is no consideration, it is wiser to stick strictly to simple effects.

Another thing to keep constantly in mind is suitability. Nothing incongruous can be acceptable. When building, consider the site, the climate, the uses the building must serve. A home is first and foremost a place to live in, therefore it must be beyond all else livable.

Keep your house harmonious inside and out. No cheap imitation Louis Quinze furniture standing on rag rugs. No luxurious satin and lace bedspreads in the room with cottagey chintz curtains. These things, though charming apart, together are very irritating.

A Successful Home

One of the most entirely successful homes I saw on my coast to coast motor tour last summer was in the remote Mesa Verde National Park far down in the southwest corner of Colorado.

In this beautiful, wild and, but for the skill of engineers, inaccessible spot, the park superintendent and his wife have built their own delightful home. They were, strictly limited in their choice of plans by the first two considerations I have mentioned—money and suitability. Yet their home produces a thoroughly artistic effect.

Mesa Verde, meaning the green mesa, is a very lofty tableland separated from other level mesas by deep, precipitous canyons. Here the ancient Cliff-Dwellers, a peaceful tribe, came thousands of years ago seeking safety from the attacks of more warlike Indians. They chose as building sites the high ledges where wind and rain have hollowed caves like deep-eye sockets under the rim rock of the steep cliffs. Here, literally overhanging the abyss of the canyon, they erected their extraordinary dwellings, which stand today, the marvel of archaeologists.

Copying the Cliff-Dwellers

Mr. and Mrs. Nusbaum had no such problem as these prehistoric Americans who, with no tool but a rude stone ax, hewod the blocks of red rock and, with incredible exactness, reared their mud-mortared walls and towers on ledges that we would think of as mere toe-holds hanging over perilous depths.

But still the Nusbaums had a problem. All our more usual types of architecture appeared out of place in these surroundings. Moreover, the government allowed but $1500 for the residence which was to shelter the family. Taking a hint from their predecessors, they solved the puzzle.

They could not very well live on the face of the cliff, but a home demands some privacy. Through a little thicket of pinion, juniper and scrub oak, out on a broad rim rock where coyotes howl to the winter moon, stands the dwelling. Securely broad and low, with its sides of red stone blocks laid in almost exact reproduction of the old Indian style, it peers over the rim of the canyon to an opening through which far blue mesas and very far blue mountains may be seen.

Nothing Tawdry Here

A glance shows us that they have made the ideal choice of location and style. Just that building belongs just there. But it is the inside of the house which most clearly teaches the lesson of the beauty of simplicity amid such surroundings.

Plain creamy plaster on the walls. Severely plain fireplaces. Floors of broad hand-planed boards where lie genuine Navajo Indian rugs of soft wool in quiet black, white and gray designs.

Sand Painting Rug

The only brightly colored rug hung on the walls of the dining room, where it shone like a jewel. This rug or "blanket" reproduces the pattern of a sand painting, and is woven after the elaborate picture made in a special ceremonial by the medicine men, who, with astonishing skill, develop the intricate design in many colored sands sifted rapidly on the ground between the thumb and forefinger.

Superstition or professional jealousy causes the artist to destroy the picture before the next sunrise and to warn the women, who are the blanket weavers, that an attempt to copy it will result in the impious one being stricken with blindness.

But at last the women, answering who may say what urge of modern emancipated womanhood, dared the curse and produced marvelously beautiful rugs that are still very rare. These blankets are the more remarkable when we learn that no pattern is set up before the Navajo weaver. Carrying the most intricate design exactly in her head, she sits down to her loom and weaves the mental picture without hesitation or correction.

No Overdone Decoration

Decoration is wisely restrained throughout the Nusbaum's mesa home. In the big living room, large Indian pottery jars on deep window seats held Japanesque branches of blueberried juniper. Beautifully colored Indian baskets were placed here and there. On the walls hung a few quiet pictures or a bit of old Spanish handwrought iron ornament.

The furniture was designed and made by the home owners themselves from the soft white pine that cuts, they told me, almost like cheese. Chairs, tables, book presses with inviting rows of books, are all substantial, solid and simple. They are rubbed to a dull silvery sheen with oil from the shale rock that abounds. All are decorated with admirable reserve in conventional Indian designs carved by hand and colored a soft turquoise blue with native dyes. Bedrooms and office are in keeping with the living apartments.

The whole effect is indescribably cheerful and homelike. Full of rest and comfort and of real beauty. Carrying out the idea of livableness, there is a modern bathroom and a shining kitchen that would make any cook ache to get to work.

Keynote of Home

As I left this adorable place, I said to my host, "You have made a real home out here on the mesa. That means lots of thought and work." "Yes," he replied, "and it means a lot of living in it as well." Here he struck a true note. No house that has not been lived in, and I may add that has not been loved, can look like a real home. As time passes, the house begins to take on the characteristics of those who live in it. It acquires a distinct individuality.

Dad's den does not express the same personality as daughter's room or the boy's sanctum. Yet there is a subtle similarity pervading all, a something of kinship that makes us feel the family tie, for the spirit of the housemother hovers over every part and binds the whole into one harmonious HOME.

Flames in the Forests

AS I MOTORED through the splendid forests of the Northwest this past summer, my attention was attracted by the frequency of fire-warning signs showing a hideous, ravenous wolf with dripping jaws, and bearing the admonition, "Don't turn him loose in the woods."

And everywhere were posted instructions to tourists to extinguish every spark before leaving camp, to smokers, enjoining them to break each match in half and put it out before throwing it away. Idaho was even refusing permits to householders to burn rubbish.

The acrid scent of smoke from fires 100 miles away was noticeable. Later we passed through considerable areas where once beautifully wooded mountains stood defaced by large tracts of charred tree stumps—a most melancholy spectacle.

Lastly, we entered a region of smoke-laden air in which we drove steadily for two weeks. The landscape was blotted out. The lovely scenic region known as the Northwest was ablaze in hundreds of scattered districts.

Montana, Idaho, Washington, Oregon, California were witnessing priceless timber and property going up in smoke. Wild life was scourged from the woods with flaming lashes. Invaluable water sheds were being destroyed for many decades. Tourists were turned aside from their objective points, thus depriving the inhabitants of customers.

And most of it was a horrible needless waste. In the rainless summer of the West, when woods are tinder dry, fires are inevitable. Lightning alone starts many a blaze. But the people, who should be eager to preserve the beauty and prosperity of this delightful land, form its worst menace.

There is scarcely a state in all our country but which suffers annual loss from avoidable fires. Campers, smokers, grass burnings, all contribute to the destruction. Housewives can at least reduce the fire risk around the dwelling to a minimum.

"Wot're Yer 'Fraid Of?"

AS MUCH as 1900 years ago we were told that if we had faith no bigger than a grain of mustard seed we could remove mountains. In more recent times the theory has been voiced that a great number of people who might be alive, well and happy, were simply scared to death.

"Cast out fear as you would cast out devils" became almost a slogan, until now it is generally realized that a serene mind, free from useless apprehensions, is one of the strongest aids toward securing a long and happy life. "I've suffered many terrible things in the course of my existence," said a well-known character, "but most of them never happened."

Most of us know that we waste a great deal of time and strength and squander much happiness in worrying over anticipated evils. But that we are actually dying of fright seldom occurs to us.

In this connection, there is much interest attached to a recent feat of Houdini, the famous magician, who expressly denies any supernatural powers and plans a campaign to expose the extravagant claims of fakirs.

During the first week in August, Houdini placed himself in a metal casket, the top of which was then soldered on. The air-tight case was lowered to the bottom of a swimming pool and every possible precaution was taken against deception. He was liberated, a trifle dizzy to be sure but none the worse, one hour, 31 minutes and 30 seconds after entering the casket.

According to physicians, the amount of oxygen at his disposal should have been exhausted in three or four minutes. Houdini asserts that any man in good health could accomplish this feat by remaining practically motionless, using shallow breathing and *if he believed himself safe.*

Frankly, we do not know anyone whose faith would endure for the time it took to solder on the lid. Houdini's apparently did. His experience is, to say the least, suggestive. It points directly to the wisdom of avoiding unnecessary worries and subduing unnecessary fears.

Lettuce Comes to the Table

FOR A NUMBER of years dieticians have been at work on the American digestion—notably a bad one. On many a printed page, in the schools and doctors' offices, it has been pointed out that, to whatever cause may be assigned the apparent national weakness of the stomachs of our fellow countrymen, it may be remedied by a wisely balanced diet. In this, salads that include fresh fruits and vegetables play a conspicuous part.

It must be gratifying to these propagandists of health to note that their advice is being heeded. As readily imagine the play of Hamlet with Hamlet left out as a salad without lettuce. And here comes a joyous report from the United States Department of Agriculture itself, stating that in 1925 we ate $20,000,000 worth of lettuce.

Oh! what tons of salad must have reposed on $20,000,000 worth of lettuce leaves. And how much will we consume in 1926? And how much better we'll feel.

'Round the World Alone at 60

A CHEERFUL friend of 60 years old is on her way alone round the world. Having lost her husband and married her children happily, she finds herself foot-loose for the first time in her life. Her income is not large, but by renting the home, she finds that with this additional money and entire freedom from the usual expenses of keeping up the house, it is practically as cheap to travel as to stay at home. She has chosen travel. May our readers feel as energetic and interested in life and living when they reach her age.

A $1000 Conscience

THE SINCERE pleasure of owning a conscience void of offense, induced a tariff-evader to send a $1000 bill to the collector of customs last summer. He stated that $775 was his exact debt to Uncle Sam, but he added $225 as a self-imposed fine. Better late than never.

Rambles of a Horticulturist

(Continued from page 5)

The committee has taken the lead in some outstanding movements, including the formation of co-operative associations, canning plants, prune dryers, etc. Kenneth Miller, secretary of the agricultural committee, handled the details for our visit and did it in a highly commendable way.

The Willamette Valley, in which Portland is located, is about 175 miles long, extending from Divide, about 40 miles south of Eugene, north to the Columbia River, which is just a little ways north of Portland. The Willamette River flows north through the valley. In width the valley extends from the foothills of the Cascades, which parallel the coast at a distance from it of about 125 miles, to the range of hills or low mountains which

Canning plant of the Springbrook Packing Company, a co-operative located at Springbrook, Ore.

immediately flank the coast. The valley is divided into an east and west part by a range of hills about 40 miles wide. The land in the valley is quite rolling and even hilly in places. Some fairly flat land is found along the river. Little fruit is grown on such land, however, most of it being grown on the more rolling land.

The valley has a rainfall of about 44 inches annually and irrigation is unnecessary. Some growers feel, however, that irrigation would be advantageous at times. The land is of volcanic origin and of variable composition. For the most part, it is of a deep, loose nature and seems especially well adapted for fruit.

Prunes Are Leading Fruit

The leading fruit crop is prunes, about 40,000 acres of this fruit being grown. The crop this year promised to be about 60,000,000 pounds of dried prunes (about 180,000,000 pounds fresh). The largest acreage exists around Dallas in Polk county, where about 15,000,000 pounds of dried prunes are produced annually. This city is said to process and ship more prunes than any other city in the world. There are four processing plants in the city, which employ about 4000 people. Drying plants are thickly located throughout the section, most of the large growers having their own plants. I visited a new plant being built by Kimball and Voth, which will have a capacity of 1600 bushels in 24 hours, the largest in the Northwest. Practically all the dried prunes produced in Oregon are raised in the Willamette Valley.

The French variety of prune is the one mainly grown. The trees are worked chiefly on peach roots to adapt them to the fairly light soils. Brown rot is a factor in production, but this is controlled rather effectively by spraying. Curculio is not troublesome.

Pears and Small Fruits Grown in Quantity

Pears are grown to a large extent in the Willamette Valley. Blight is not particularly troublesome. The pears are largely of the Bartlett variety. Some of these are shipped in the fresh condition, but a large proportion of them are canned.

The Willamette Valley is one of the leading sections of the Pacific Coast in the production of small fruits. Blackberries, red raspberries, black-cap raspberries, Loganberries, strawberries and gooseberries are all produced in quantity. Nearly all of these fruits are canned or processed. The valley is particularly well equipped with canning plants to handle such products. The chief canning centers are Salem, Dallas, Hillsboro, Eugene and Springbrook. The Willamette Valley canning plants handle not only the crop produced in the valley, but they also handle fruit from other sections, including Hood River and Yakima. I went through a number of canning plants, including that of the Washington County Berry Growers' Association, the Springbrook Packing Company and that of the Ray-Maling Company, Inc., at Hillsboro. The latter is the largest plant in the Northwest. All of these plants are models of efficiency and cleanliness. No one need have any fear about the quality or cleanliness of fruit canned in Oregon.

Freezing of Berries Gaining in Use

The keeping of berries by the freezing method is gaining rapidly in use. This year about 25,000 barrels were handled in this manner in Portland cold storage plants alone, and additional quantities were handled at other points. The berries are packed in clean 50-gallon barrels immediately after picking. In the case of strawberries, two parts of berries are used to one part of sugar. The berries are placed in a barrel and the sugar is then poured over them. Some packers use the same proportions for raspberries, but most of them use no sugar for either raspberries or Loganberries. After the barrels are packed, they are hauled to storage and kept at a temperature of 0 degrees to 10 degrees Fahrenheit for 10 days. Following this, the barrels are shipped to the large markets. Because of their low temperature, the berries carry well in refrigerator cars. On arrival, the berries are kept in cold storage until they are used by confectioneries, bakeries, etc.

Rogue River Valley

I visited the Rogue River Valley district in southwestern Oregon after leaving the pomological party at Wenatchee. This district grows 2000 to 2500 cars of pears a year, about 400 to 600 cars of apples and some peaches, apricots and Tokay grapes.

The district has a rainfall of 10 to 18 inches a year and irrigation is practiced. The water is supplied by three different projects. The weather is milder than in the Willamette Valley and at Hood River, but even here sudden changes and low temperatures sometimes occur which cause winter killing to be a serious factor.

Of the pears, Bartletts make up about 50 per cent of the plantings. The remainder are fall pears, including Bosc, Winter Nelis, D'Anjou, Comice and Howell. Fall pears are increasing in popularity, particularly the Bosc, and they promise to soon constitute the majority of the plantings. Practically all of the pears are shipped fresh, though a few of the Bartletts are canned locally or are shipped to California or the Willamette Valley for canning.

Pear Blight Is Serious Factor

Blight is a serious factor in pear growing. To date the chief method of combating it has consisted in the removal of infected branches and twigs. The Agricultural Experiment Station has appreciated the importance of this problem and has established a branch station at Ashland. Prof. F. C. Reimer, who is in charge, is recognized as one of the foremost authorities on rootstocks in relation to pear blight. He has made two trips to China and Siberia in search of resistant stocks. Curiously enough, pear blight is unknown in China and Siberia. Perhaps it has not been introduced there. For Oregon conditions, a stock with wide adaptability as to soil type and moisture requirements is necessary. The French stock has been considered best since trees grow well when worked on it, but this stock is not blight resistant. However, certain strains or varieties, including the Old Home, have been found which have proved fairly resistant, and it is hoped that in time some important results may be obtained from these.

Prof. Reimer brought to America from Asia four species of rootstocks. None of these is totally resistant. The *Pyrus Calleryana* is showing the greatest amount of resistance. However, even this species does not possess complete resistance. Furthermore, different strains or varieties within this species, as well as in others, are showing differences in resistance. This agrees with the results found among apple and citrus seedlings of a given species with reference to vigor, size and productivity. The pear blight problem appears to be one, first, of finding the best species to use as a rootstock, and, second, of determining the best varieties and strains to use within the species. In all probability, the resistant strains, if ever found, will have to be preserved and multiplied by asexual methods.

The station is investigating the subject in a comprehensive manner and no doubt will develop some valuable information in time. It is a slow job, however, to solve the difficulties of this

(Concluded on page 26)

Pecan Culture as a Business

(*Continued from page 4*)

Marketing Problems

The marketing of pecans has not been a difficult problem to date. The production from seedlings and inferior varieties has been sold as shelled nuts or as cheap unshelled nuts. Nuts from superior varieties and from high grade seedlings have usually moved in the shell at good prices. Many growers have sold their crop to local buyers, and others have sold to special buyers in distant markets. Numerous organizations and individuals have dealt with the crop in large quantities, and some of the crop has been handled co-operatively.

The acreage of pecans has been steadily increasing, and the marketing is receiving more and more attention. The industry is subject to the problems which meet any new development. There are still many obstacles to overcome, but on the whole good progress has been made. Satisfactory cracking and grading machines have been developed. Methods of carrying over the nuts in cold storage have been developed and these have proved a real advantage. Excellent work has been accomplished in locating the more desirable markets. Many pecan growers have been marketing their product individually, but as the industry grows, growers are beginning more and more to realize that sooner or later they must market their crop in conjunction with others, and they are selecting varieties and making new plantings with that end in view.

What Agricultural Workers are Doing to Assist Pecan Growers

It is important for both present and prospective pecan growers to know what agricultural workers are doing or are planning to do to assist the pecan industry. Studies are being made by a number of state institutions as to the best varieties to grow. Investigations are also being made with the object of discovering new varieties, if possible, that will be improvements over those now in existence. Progress is also being made in developing improved methods of control for insects and diseases which now cause more or less damage. Cultural practices are being investigated in a number of places, and without question we should be able to make improvements along this line as a result. The best rootstocks to employ for pecans is a large question in itself. This question will require time for its solution, but there is little doubt but what commercial growers will be able to profit materially as a result of investigations which are being conducted along this line. Fruit bud formation in the pecan is also being studied. A better understanding of this matter will enable growers to so handle their trees as to promote the best fruit bud formation and setting. Important progress has already been made in the fertilizing of pecan trees, particularly with reference to the use of cover crops. However, investigations are still needed along the line of fertilizing, and this subject is being investigated from several standpoints by various experiment stations in the pecan section. From a marketing standpoint, there are also problems which are being investigated. The nutritive value of pecans is being studied in order that data will be at hand with which to educate the public as to the value of pecans for general consumption. Still further investigations of minor nature are being conducted in the interests of pecan growers.

BULLETIN 326 of the Texas Agricultural Experiment Station, College Station, Texas, gives the results of 16 years of breeding experiments with blackberries and raspberries. It contains descriptions of the behavior of hybrids, seedlings and compound hybrids of various berries. It describes the development of the Nessberry, which is the result of a cross between a raspberry and a dewberry. The characteristics of this new berry are also discussed and methods are presented for its propagation.

CHATS WITH FRUIT GROWER'S WIFE

By HAZEL BURSELL

Preparing the Garden for Winter

EVERY lover of flowers knows that she must put her garden to bed for the winter if she is to have early and continuous enjoyment from her flowers the following spring and summer. She wants the earliest crocus and the biggest, thriftiest daffodil in her neighborhood, and she can secure them only as a result of careful preparation this fall.

As soon as the weather is cool enough to permit the transplanting of perennials without wilting, My Lady gardener should move all such plants from their seed beds, where she has been growing them all summer, to their permanent locations. In this class would come hollyhocks, Canterbury Bells, columbine, Sweet William, phlox, snapdragons, fox gloves, delphinium, primroses, wall flowers, violets, daisies and spice pinks. She will put each in its place according to height, color and date of blooming, as previously indicated on her garden plan. Other plants which are to be moved from one bed or border to another should be transplanted at this time.

Wall Flowers Need Sun

Fox gloves, delphinium, columbine, phlox, Canterbury Bells and snapdragons grow quite tall, ranging from three to six feet in height, and should be planted at the back of the bed or border. Hollyhocks will grow 10 feet or more in height, depending on the soil, and should therefore grow in outside border beds where height is desired. They are most attractive along a white or cream-colored lattice fence, which gives both support and added beauty. Wall flowers and Sweet William grow from one to two feet in height and should grow in the middle rows of the bed. Wall flowers bloom earliest and show to best advantage if planted in a warm place, such as along the south wall of the house or garage.

Primroses, daisies and spice pinks are low growing, making them fine border plants for your flower beds. The "Primrose Path" is not usually held in good repute in the best circles, but you can achieve a perfectly harmless one by planting yellow or yellow and bronze primroses along your favorite path. They should be grown in the sun if you wish to produce early blooms.

Who would want to miss the first violets of the springtime—those tiny purple flowers with their wonderful fragrance? No true garden lover could resist their appeal! You will want a tiny bed of them tucked away in a sunny corner of your garden where the soil is comparatively rich. You will be well repaid in flowers in the spring.

Store Geranium Plants

As soon as the first frost comes, cut the dead stalks on the delphiniums, fox gloves and dahlias, and pull all withered annual plants. If you have a water-tight box or pit in which to prepare humus for the soil from the dead vines, stalks, leaves, etc., all such waste material should be placed in this pit, kept moist and turned until well-rotted, and then spread on the flower beds. Such a mixture puts back into the soil much of the material that has been taken out by the plants in growing. Geranium plants may be taken up from the beds and porch boxes, placed in a large box partially filled with dirt, and stored in the basement over winter. In the spring, the tops may be trimmed and the roots planted in the garden again. The plants will put out new branches and blossoms.

The proper time to enrich the soil for the following year is in the fall and winter. All perennial flower beds should have a blanket covering of fertilizer, leaf mold and straw, which will serve both to enrich the soil and protect the plants from freezing in extremely cold weather. Certain plants are greatly benefited by wood ashes. This is especially true of delphiniums. The writer tried it out last year. She put a quantity of hardwood ashes around two delphinium plants and left the others without ashes. The two plants given the ashes sent up more and thriftier flower stalks, had better color and bore several times during the summer (they were cut down to the ground after each blooming). The other plants did not do nearly so well.

Plant Bulbs This Fall

Bulbs for spring blooming must be planted in the fall, preferably the latter part of October or early in November. A rich sandy soil is best for all types of bulbs. Crocuses should be planted in the lawn, in rock gardens, or along paths or walks and left undisturbed from year to year. Tulips, hyacinths, narcissi and daffodils will each reward you with their characteristic blossoms next spring if the bulbs are planted this fall. But plant them in separate beds in an orderly manner. A general mixture of all types in one group is not at all successful. Tulips are effective in round or border beds in the front lawn. Hyacinths make pretty flowers for the porch box in the early spring and are also good in round and border beds. I use all the pastel colors in hyacinths in one group, but I prefer not more than one or two kinds of tulips in any one bed. You might mix an early blooming tulip with a later variety with good results, thus prolonging the blooming season.

Daffodils and narcissi may be planted together, alternating in the rows, if the gardener desires, as the daffodils bloom early and will be all through blossoming before the narcissi are ready. There are some very beautiful new varieties of daffodils, ranging from the giant cup-and-saucer-like yellow ones, to the delicate, creamy-tinted, small-cupped variety. Do not be satisfied with the ordinary commonplace type! There are many beautiful types and colors of iris. They are easily grown and give great satisfaction for little expense and effort. They prefer a cool, moist growing place.

Bulbs Multiply Rapidly

Tulips, daffodils and iris multiply very rapidly, and will provide you with an ample supply in two or three seasons. Ye Editor bought three dozen Kaizerkroon tulips the first year and had nine dozen when she went to plant them the next fall. Iris must be separated every two or three years. The fact that bulbs do multiply rapidly makes it rather convenient, as you can trade with friends who have other choice bulbs or plants.

You will never know the real pleasure to be derived from a pot or two of hyacinths, tulips or daffodils grown to bloom in mid-winter until you have tried them. For hyacinths, choose three or more strong, healthy bulbs in harmonizing pastel colors, place them in an earthen flower pot and cover to a depth of half an inch with rich, sandy loam. Set the pot in a dark place, keep moist for three weeks, or

until sprouts begin to appear, and then bring up to the light and keep in a warm room. The addition of a little bone meal from time to time will assure you of thriftier plants and larger blooms. Other bulbs would be treated in the same manner. Bulbs used for potted plants one season should be planted in the garden the next year, as they cannot stand forcing more than one season.

Certain tubers and bulbs must be dug in the fall and stored in a dry place over winter to prevent freezing, in contrast to those that are planted in the fall. Dahlias, gladiolas and cannas are in this class. Dahlia tubers should be left on the main stalk for storing, as they lose strength if separated in the fall. Label for color and variety, cut the stalks about six inches above the tubers, wash, dry and store in a frost-proof place. Cannas are most sensitive to freezing temperatures, so in order to be safe, they must be dug, washed, dried and stored over winter. Gladiolas will survive in the ground in ordinary weather, but the owner would run the risk of losing them in a sub-zero climate. Gladiolas should be labeled, dug, washed and stored with the tops on.

Plant Sweet Peas in Fall

Sweet peas should be planted in the fall before cold weather begins, if they are to develop to best advantage. The ideal way is to dig a trench about two feet deep the length of the row and fill this with well-rotted manure to within three inches of the top. Fill in with ordinary soil, mixing it with the fertilizer to some extent, plant the seed and cover to a depth of half an inch. They'll do the rest! Do not plant mixed seed, as much better garden effects and bouquets can be achieved through the planting of two or three lovely pastel colors.

One of the most important things in preparing the garden for the coming winter is the adequate protection of delicate roses and shrubs from freezing. They may be wrapped in burlap from the tip to the ground. Straw will offer good protection for the roots. Climbing roses often suffer most. These can be loosened from the trellis, wrapped, and laid on the ground in many cases. Early flowering shrubs, such as the camelia, must be wrapped to protect the buds, which form during the previous season.

Who is there who does not thrill to the first symbols of spring—proud cock robin and the first yellow crocus, primrose or daffodil bursting into bloom? A little preparation this fall and you, too, can enjoy to the fullest these harbingers of a new season!

Pickle and Relish Recipes

PICKLE and relish recipes were given in the September issue, but the thrifty housewife never has too many such recipes, so we are giving additional ones this month. These are tried-and-true recipes and should be welcomed for the ever-growing cook book. Relishes add zest to any menu, and, if stored for winter in sufficient variety, they should completely put to rout that enemy of good cooking—Monotony!

Chowchow—I

2 qts. green tomatoes	Salt
12 small cucumbers	2 oz. tumeric
3 red peppers	½ oz. allspice
1 cauliflower	½ oz. pepper
2 bunches celery	4 oz. mustard seed
1 pt. small onions	½ oz. clove
2 qts. string beans	1 gal. vinegar

Prepare vegetables and cut in small pieces, cover with salt, let stand 24 hours and drain. Heat vinegar and spices to boiling point, add vegetables, and cook until soft, heating slowly. Seal in jars and store.

Chowchow—II

Peel 1 qt. tiny white onions and add 1 qt. small cucumbers, 2 heads cauliflower, separated into flowerets, and 2 green peppers, thinly sliced. Cover with brine (allowing 1½ c. salt to 2 qts. boiling water) and let stand over night. In the morning drain thoroughly, add fresh brine, bring to boiling point, and let simmer until vegetables are soft, then drain thoroughly. Mix 6 T. mustard, 3 T. flour, 1 T. curry powder, and ⅔ c. sugar. Moisten to a smooth paste with cold vinegar, and add to 2½ c. vinegar, brought to the boiling point. Cook, stirring constantly at first and afterward at intervals, until mixture thickens; then add drained vegetables and let simmer 10 minutes. Store in glass jars.

Allerton Pickles

3 pts. tomato pulp	6 T. sugar
1 c. chopped celery	1 T. nutmeg
4 T. red pepper	1 t. cinnamon
4 T. chopped onion	1 t. clove
4 T. salt	2 c. vinegar
6 T. mustard seed	

Wipe, peel and chop ripe tomatoes sufficient to make 3 pints of pulp. Add remaining ingredients and stir until thoroughly blended. Put in stone jar and cover. Let stand at least one week before using. This uncooked mixture is supposed to keep six months.

Tomato Sauce

12 large tomatoes	2 T. salt
3 bunches celery	2 T. sugar
4 green peppers	3 c. vinegar
2 onions	

Peel and chop tomatoes and onions, put in kettle and add celery (from which leaves and root have been removed) and peppers, both finely chopped, and remaining ingredients. Bring to boiling point and let simmer 1½ hours. Fill sterilized bottles with mixture, cork tightly with new corks, and seal.

Beet Relish

1 c. chopped cooked beets	2 T. powdered sugar
3 T. grated horseradish	1 t. salt
	2 T. lemon juice

Mix ingredients in order given and serve fresh. Canned beets and bottled horseradish may be used, if well drained.

Grape Catsup

Pick over, wash, drain and remove stems from grapes. Put in preserving kettle, add cold water to barely cover, bring to the boiling point, and let simmer until the fruit is soft; then press through a sieve, discarding skins and seeds. Put 10 lbs. of the fruit pulp in a preserving kettle and add 5 lbs. sugar, 2 qts. vinegar, 1 T. cinnamon, 1 T. allspice, 2 T. cloves and 1 grated nutmeg. Bring to the boiling point and let simmer until reduced to the consistency of a catsup. Fill bottles to overflowing, adjust stoppers and seal. If a smaller quantity is desired, use half of the above recipe.

Corn Relish

1½ doz. ears corn	2 c. sugar
1 small cabbage	1 c. flour
1 bunch celery	½ c. salt
4 onions	½ t. mustard
2 green peppers	½ t. cayenne
2 qts. vinegar	½ t. tumeric

Cut corn from cob. Force cabbage through a meat chopper. Separate celery stalks, remove leaves, and chop. Peel onions and cut in thin slices. Wipe peppers and chop. Put vegetables in preserving kettle and pour over one-half of the vinegar. Mix sugar, flour, salt, mustard, cayenne and tumeric, and add remaining vinegar. Combine mixtures, bring to boiling point, and let simmer 40 minutes. Fill sterilized jars and seal.

Gherkins

Wipe 4 qts. small unripe cucumbers. Put in a stone jar and add 1 c. salt dissolved in 2 qts. boiling water, and let stand 3 days. Drain cucumbers from brine, bring brine to boiling point, pour over cucumbers, and again let stand 3 days; repeat. Drain, wipe cucumbers, and pour over 1 gal. boiling water in which 1 T. alum has been dissolved. Let stand 6 hours, then drain from alum water. Cook cucumbers 10 minutes, a few at a time, in one-fourth the following mixture heated to the boiling point and boiled 10 minutes:

1 gal. vinegar	2 sticks cinnamon
4 red peppers	2 T. allspice berries
2 T. cloves	

Strain remaining liquor over pickles which have been put in a stone jar.

Pepper Relish

12 green peppers	3 T. salt
12 red bell peppers	2 c. sugar
3 onions	1 qt. vinegar

Wipe peppers, cut in halves lengthwise and remove seeds. Pare onions, add to peppers, and force through a meat chopper. Put in kettle, cover with boiling water, and let stand 10 minutes; drain, again cover with boiling water, bring to boiling point and let stand 10 minutes. Drain as dry as possible, return to kettle, add remaining ingredients, bring to boiling point, and let simmer 15 minutes.

Table of Abbreviations

1 t. equals 1 teaspoonful
1 T. equals 1 tablespoonful.
1 c. equals 1 cupful
1 pt. equals 1 pint (2 c.)
1 qt. equals 1 quart (2 pts.)
1 gal. equals 1 gallon (4 qts.)
1 bu. equals 1 bushel
1 pk. equals 1 peck
1 lb. equals 1 pound
1 oz. equals 1 ounce
1 doz. equals 1 dozen (12)

(All measures level)

Sewing Room Equipment

FALL sewing occupies a prominent position in the mind of the farm housewife and mother at this season of the year. She has her own winter clothes to plan and make, and then all the school things for Mary and Alice if she hasn't already completed their wardrobes. Work of any kind is made easier and more efficient with the proper tools. These tools can give her the best in service through the long period of years only through receiving proper care.

The sewing machine is the first and most important item. If the machine is used daily, it will need a little attention at the end of every day's work, but if used as the average woman uses it, a thorough overhauling once a week will keep it running well.

Never use any but the best sperm oil unless you buy that sold by the makers of your machine. Once in a while it is a good plan to use kerosene instead of oil—unthreading the machine. After using the kerosene, run the machine well for a few minutes, then let the kerosene remain over night. It will cut the dirt and help dislodge old oil. In the morning clean every part of the machine well, seeing that no dirt or oil remains. It can then be oiled in the regular way, and after running a few minutes, wiped thoroughly so that no oil will get on the sewing material. Do not use too much oil, and put it on at night if possible.

Pay attention to the directions that come with the machine as to the right sized needle for a certain number of thread, the right length of stitch, etc. In some machines the tension is never touched, but where it has to be adjusted, try the stitch on scraps of cloth you are to sew on, using the usual thicknesses. Then make the adjustments with the sample stitches as your guide.

The facilities for pressing patterns, material, seams, etc., constitute another important part of sewing room equipment. The home seamstress will need a clean, well-padded, smooth covered ironing board, a sleeve board and electric iron or set of flat irons, as the case may be. There should also be a tracing wheel, French chalk, basting thread, pencil, sharp scissors, small box of common pins, needles, a sewing or armless chair and cutting board. A swivel chair has been found convenient, so that the seamstress may turn from machine to table without rising. Most women use the dining room table as a cutting surface, unless they have a special sewing room, and it serves very well with a white oil cloth cover.

No. 2570—One-Piece Dress.
Cuts in sizes 16 years, 36, 38, 40 and 42 inches bust measure. Size 36 takes 3 yards of 40-inch material.

No. 2675—Afternoon Frock.
Cuts in sizes 36, 38, 40, 42, 44 and 46 inches bust measure. The 36-inch size takes 3½ yards of 40-inch material with ⅝ yard of 32-inch contrasting.

No. 2788—Slender Lines.
Cuts in sizes 18 years, 36, 38, 40, 42, 44 and 46 inches bust measure. The 36-inch size requires 2¾ yards of 40-inch material with ⅞ yard of 18-inch contrasting and 1½ yards of 3¾-inch ribbon for bow.

2794—Delightfully Cool.
Cuts in sizes 16 and 18 years, 36, 38, 40, 42 and 44 inches bust measure. Size 36 requires 3½ yards of 40-inch material with ⅝ yard of 36-inch contrasting.

No. 2682—Princess Frock.
Cuts in sizes 36, 38, 40, 42, 44 and 46 inches bust measure. Size 36 requires 3¾ yards of 40-inch material with 1 yard of 27-inch contrasting.

No. 2821—Youthful, Slender Lines.
Cuts in sizes 16 and 18 years, 36, 38, 40, 42 and 44 inches bust measure. Size 36 requires 2¾ yards of 54-inch bordered material.

No. 2840—Bloused Silhouette.
Cuts in sizes 16 and 18 years, 36, 38, 40, 42 and 44 inches bust measure. Size 36 requires 3¾ yards of 40-inch material.

No. 2547—Coat Frock.
Cuts in sizes 16 years, 36, 38, 40, 42, 44 and 46 inches bust measure. Size 36 takes 3⅝ yards of 40-inch material.

No. 2244—Comfortable Sleep-Ins.
Cuts in sizes 2, 4, 6, 8, 10 and 12 years. The 8-year size requires 2½ yards of 36-inch material.

No. 2059—Boys' Suit.
Sizes 2, 4, 6 and 8 years. The 4-year size takes ¾ yard of 36-inch material, with 1 yard of 40-inch contrasting for trousers, collar and cuffs.

No. 2770—Men's and Boys' Shirt.
Sizes 12½, 13, 13½, 14, 14½, 15, 15½, 16, 16½, 17, 17½, 18, 18½ and 19 inches neck. Size 15½ requires 3½ yards of 36-inch material.

No. 2644—Junior Frock.
Cuts in sizes 8, 10, 12 and 14 years. The 8-year size requires only 1⅝ yards of 40-inch material with ⅝ yard of 36-inch contrasting.

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Rambles of a Horticulturist

(Continued from page 23)

great problem. As I understand it, the station is at present recommending the French stock for sections like the Willamette Valley, in which blight is not serious. Where blight is serious, the *Pyrus Calleryana* seems to offer the best promise. These recommendations are offered only as a temporary proposition. The station is giving attention also to the question of hardiness in its rootstock investigations, since it has found that some resistant stocks are not hardy.

Apples Are Second in Importance

Next to pears, apples are the most important crop in the Rogue River Valley. Formerly apples were grown in larger quantities, but the production has gradually been falling off. Practically no new plantings of apples are being made. The Newtown Pippin is practically the only variety grown, although there are a few Winesaps. The Newtowns have fine quality and have established a good reputation on the market. Part of the crop is stored in local cold storages, and the remainder is shipped to other centers. Codling moth is a rather serious factor in the growing of both apples and pears.

Quite a few peaches and some apricots are grown in the district, but these are consumed locally. Some Tokay grapes are grown at Grants Pass. About 25 to 30 cars were shipped two years ago and about the same amount will be shipped this year. Frost damaged the crop last year.

The Rogue River Valley is troubled with spring frosts, and smudging is almost universally practiced. It is common to smudge three or four times a year, and this year the fires were lighted eight to 12 times. Fruit crops are often saved by smudging.

There are two canneries in the district, one at Medford and one at Ashland. Co-operative marketing associations have been started, but as yet none of them has proved a permanent success. The growers were getting ready to pick pears at the time of my visit in July, and they were preparing to wipe all apples and pears, due to the arsenic situation. Many growers were installing wiping machines, and others were preparing to do the work by hand. A local chemist was getting ready to analyze samples from every car. L. P. Wilcox, county agent, was beginning to test pears for sugar content in order to help growers to determine the proper time for picking and shipment. Government-state inspection is available for growers in the Medford section. I am indebted to A. S. Rosenbaum of the Southern Pacific Railroad for driving me about in the Medford section and to R. K. Norris, assistant to Prof. F. C. Reimer, for giving me the information about the experimental work.

Letter from One of Our Agents

AMERICAN FRUIT GROWER MAGAZINE: In regard to renewals, I find it very easy to write them. I never have to use pressure on a renewal. One man told me he would not try to run his orchard without the AMERICAN FRUIT GROWER MAGAZINE. Another one showed me a stack of magazines extending three years back, stating that he referred to these frequently for different formulas.

Recently, one grower met me at the door in an indignant frame of mind. He would not even give me a chance to pass the time of day. I remarked that I was taking subscriptions for the AMERICAN FRUIT GROWER MAGAZINE. Then he asked me in and on looking up his magazines he found that his time was about out. He renewed at once and asked me to stay for dinner. Most everyone who reads the magazine speaks very highly of it.—*E. N. Lamberson, Utah.*

Lawyer (to Casey, who is filing suit)—Have you tried to settle the case out of court?

Casey—Sure not! 'Tis damages I want fer bein' run over—not revenge!

Bee Keeping for Fruit Growers

By H. F. Wilson

Beekeepers May Use Bonded Warehouses for Storing Honey

ACCORDING to recent information from Washington, under the warehouse acts beekeepers may place their honey in bonded warehouses. The warehouse acts provide for the licensing and bonding of the public warehouses storing agricultural products, so that the integrity of warehouse receipts may be beyond question. Money can then be borrowed on these receipts. Several federal agencies loan money on this form of security. Aside from several private corporations, the federal reserve banks loan money on these receipts, and the establishment of the Intermediate Credit Association, in 1923, has helped to make such transactions possible.

Grain, tobacco, wool, potatoes, corn and many other products are commonly stored in such warehouses, and now it appears that these warehouses are also available for the storage of honey. As the warehouse acts provide for federal co-operation with the separate states, beekeepers who may wish to take advantage of warehousing should apply to the Department of Markets in their respective states.

Provide for Ample Honey This Fall

THE SUCCESSFUL beekeeper will prepare for next year's honey flow by providing good stores for the winter early this fall. When bees are put into their winter quarters, each colony should have 30 pounds or more of good honey or sugar stores. In localities where dysentery commonly occurs, it is a good practice to feed each colony of bees 10 to 15 pounds of sugar syrup in the latter part of October, after brood rearing has ceased. Many beekeepers make a practice of hefting each colony in the fall, and if the colonies seem to be about the right weight, that is thought to be sufficient. But each colony should be examined separately, and there should be at least four combs solid with honey outside of the main clustering space. If sufficient stores have not been saved to provide four solid combs, then the beekeeper should feed to make up the difference. If colonies are not given this attention, and are found to be light when put into the cellar, such colonies may be fed sugar syrup in the regular way through the opening in the honey board.

Tests carried on at the University of Wisconsin show that sugar syrup or honey may be fed to bees at all times during the winter period without disturbing the colony.

Bee Cellars Versus Outside Packing

TWO ESSENTIALS are necessary for the successful wintering of bees. First, they must have plenty of good stores, and second, there should be an abundance of young bees in the colony. When these conditions exist, winter protection is less important, and it makes no difference to the bees whether they are put away in the bee cellar or placed in packing cases out of doors. When bees are packed out of doors, they should be well protected by a good windbreak.

In selecting the location for the colonies packed out of doors, make sure that they are well protected from the prevailing winds. In the northern states, these winds usually come from the northwest or northeast, and bees should be placed on the southern slopes behind buildings or groves of forest trees. There is a general belief among many beekeepers that bees packed out of doors will winter better than bees packed in bee cellars, the reason for this being that the bees may have an opportunity to fly on warm days early in the spring. However, this is not always an advantage, since the bees may sometimes fly when there is snow on the ground and when the weather is too cold; after leaving the hive, they may become chilled and unable to return to the hive.

On the other hand, if a good cellar is available where the temperature can be kept up to from 40 to 50 degrees Fahrenheit, the bees will normally winter in excellent condition. Spring protection is also said to be an advantage over winter packing cases, but more recent investigations show that this is not of great importance, and bees wintered in the cellar will build up as rapidly in the spring as bees in packing cases, provided they are placed behind a good windbreak. If bees are to be packed out of doors, they should be placed in good non-leak cases, and the packing should not be too heavy.

Ten to 12 inches of packing is recommended by some authorities, but from four to six inches of packing is sufficient to keep the bees warm and will not hinder the bees from flying on warm days in the spring, as will the heavier packing cases. With heavier packing of from 10 to 12 inches, it takes about 24 hours for outside temperatures to reach those of the inside of the hive, and so on warm days such changes may come and go before the impulse to fly reaches the cluster.

Should the temperature be down to zero one day, up to 50 degrees Fahrenheit the next day, and then down to zero again on the following day, the temperature about the cluster will be low on the day when the temperature is high outside, and the bees will not make any effort to break the cluster and fly out. Then, on the following day when the temperature is low outside, the higher temperature will have just penetrated to the cluster, and many bees are likely to try to fly out, with serious results.

In selecting the packing materials, care should be taken to see that they are thoroughly dry. Forest leaves, clover chaff or shavings will be found satisfactory for packing, but if the packing material is damp or wet when placed in the packing cases, the insulating value will be greatly reduced, and the bees will be only slightly better off than if no packing was placed around them.

Nitrate of Soda and Sulphate of Ammonia in Michigan Vineyards

MANY growers have gotten the idea that ammonium sulphate is not as good as nitrate of soda for vineyard use. The data secured by the Horticultural Department of Michigan State College do not show any marked difference in the value of these two sources of nitrogen when equal amounts of ammonia are applied, according to a statement by Dr. Newton L. Partridge. Of course, this experiment has not been continued for a sufficient number of years to furnish a conclusive answer as to the relative value of these materials when applied for a long term of years. However, for a few years' use, one is apparently as good as the other, and the cheaper source of nitrogen should therefore be used.

The results from the experimental plots follow:

RESULTS FROM FERTILIZER TESTS WITH GRAPES.

Treatment.	Weight of prunings per vine 4 years ago. Pounds.	Weight of prunings per vine in 1925–26 Pounds.	Production, 1923. Tons per acre.	Production, 1925. Tons per acre.
(1) Check, no fertilizing of any kind	1.1	1.4	1.3	0.76
(2) 217.5 pounds nitrate of soda per acre, no lime	1.1	2.1	1.4	1.4
(3) 163 pounds ammonium sulphate per acre, no lime	1.0	2.0	1.3	1.5
(4) 163 pounds ammonium sulphate per acre with two ton lime requirement satisfied, but lime not used in excess	0.9	1.9	1.1	1.3

These figures show that the unfertilized vines were about 25 per cent more vigorous in 1925 than they were four years ago. This increase was due to the careful pruning these vines received, together with the small crop produced last year. During the same period the vines receiving nitrogen practically doubled in vigor. All of the nitrogen treatments were beneficial. During the short time the test has been conducted, the treatments have shown no significant differences. The lime has had no influence in increasing or decreasing yields or vine vigor. Results obtained in France indicate that a large excess of lime is injurious and should be avoided in a grape vineyard.

Growers who are planning to make fertilizer tests themselves should first determine the comparative productivity of the different soil plots they intend to use and take these conditions into account in interpreting the results of the experiments. Otherwise incorrect and misleading conclusions may be drawn.

Peaches and the Peach Industry

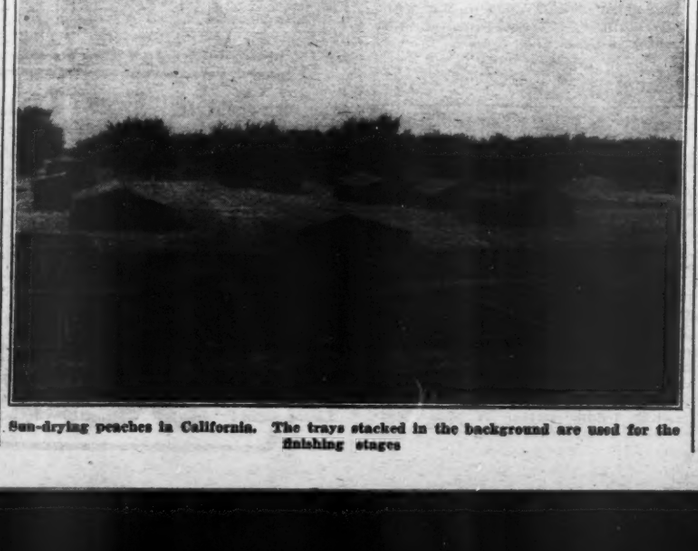
(*Continued from page 3*)

largely in California where certain varieties are planted especially for these purposes. It is true that many cases are canned elsewhere than in California, but the highest class trade calls for the firm-fleshed yellow fruit that is characteristic of the California pack. The grade of canned peaches that is possible with the softer-fleshed and less attractive freestone peaches that are available in large quantity elsewhere than in California is a rather serious handicap in the market.

Besides, the canning of cull and over-ripe fruit, commonly advocated, has its limitations. Poor or inferior fruit of any kind is not improved by any of the processes in canning. Cull and other low grade fruit when canned still remains low grade. Its food value may be acceptable, but the appearance of such canned fruits greatly affects their market value as it does when in the fresh state. In case of over-ripe or even low grade peaches, mashing them to a pulp, then placing the pulp in freezing storage for ice cream flavoring and soda fountain use, has some possibilities.

The pits and kernels, commonly regarded as waste materials, are not without value, especially in large peach canning centers and in the drying yards in California, where they accumulate in large quantities. Peach pits have considerable value for fuel and are used for that purpose, especially in California where many hundreds of tons of pits become available. During the war, it was found that peach pits made one of the most efficient types of charcoal for use in gas masks.

There are still other possibilities not commonly understood, though perhaps some of them as a matter of fact are in more frequent use than is realized. The making of oil from the kernels is probably one of the most important of the by-product possibilities. Both a fixed and a volatile oil may be made. Oil expressed from the sweet and bitter almond has long been an important article of commerce. It is used in the making of toilet soaps and cosmetics, and medicinally in the preparation of liniments, emulsions and in various other ways. The oils from peach and apricot kernels are closely related to those of sweet and bitter almonds and are used for substantially the same purposes, and to a considerable extent oil from the latter has been replaced by oil from peach and apricot kernels. These kernels have been shipped from California to Europe in past years for use in making oil. Nearly 40 per cent of the peach kernel is fixed oil, the kernel being from six to 12 per cent by weight of the entire pit. In the apricot, the kernel is about 20 to 25 per cent by weight of the pit. The possibilities of using peach kernels for making oil was investigated quite a good many years ago by the United States Department of Agriculture.[2]



Sun-drying peaches in California. The trays stacked in the background are used for the finishing stages

[2]Bureau of Plant Industry Bul. No. 133, "Peach, Apricot and Prune Kernels as By-products of the Fruit Industry of the United States," by Frank Rabak.

New Apple Grading Machine

A NEW apple grading machine has been developed by Hartramph Brothers of Hillsboro, Ore. The apples are placed automatically in cups from a turntable. The mechanism can be adjusted for either weighing or sizing the fruit. The machine is comparatively compact, being only 32 feet in length, exclusive of the turntable, which is eight feet long. It will handle four grades of eight sizes each, thus making 32 separations in all. It is claimed that the machine is capable of an output of from 2000 to 2500 boxes a day.

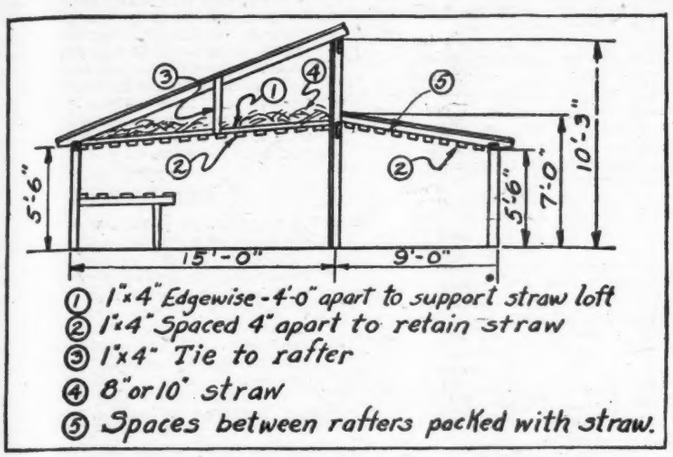
Take a look around the orchard this fall for mice. If present in abundance, get ready to poison them.

Engineering for the Fruit Grower

By E. W. Lehmann

The Cost of Housing Hens

ACCORDING to the specialists of the University of Nebraska, "good hens, well fed and well housed, will more than pay for their house rent, while poor or crowded quarters will mean diseases and few eggs this winter," which will, of course, result in a loss to the owner. A good standard house as recommended by the different state experiment stations will cost in the neighborhood of $2 per hen housed. A house 20 by 20 feet in dimensions should house 100 average sized hens. Such a house can be built for about $200. The first cost will depend on the locality in which the house is built, the cost of materials, labor, etc.



This diagram shows the position of a straw loft in a half-monitor house

Most farm economists figure an annual building cost of 10 per cent of the first cost to cover depreciation, upkeep, taxes, etc. On this basis it would cost only 20 cents a hen for her room rent in a house such as mentioned. Only a few additional eggs would be necessary to pay this charge.

A well built and properly ventilated house would not only increase production, but would reduce the losses incident to poor housing. The fruit grower who keeps chickens cannot afford to neglect this phase of his poultry business. Suggestions for poultry house improvement may be secured from the various state agricultural experiment stations without cost; plans of new houses may be had at slight expense.

Considerably more is known now about poultry house design and construction than a few years ago, and the prospective poultry house builder should be sure he is building in accordance with the latest approved plans.

The shed type of house seems to be more popular now than it was a few years ago. It should not be too high either in front or at the back. More head room than is actually needed means a cold, disagreeable house.

The half-monitor type of poultry house was a popular type in many sections of the country 12 to 15 years ago. Many of these houses have proved unsatisfactory due to the fact that they were built too high, making them cold and disagreeable. In many instances, the sunlight that came through the upper windows fell directly on the roost, which encouraged the birds to stay on the roost instead of coming down to work in the litter.

The Ohio Agricultural Experiment Station advises putting in a straw loft to correct the objectionable features of the high type half-monitor house. The illustration shows the method of putting in such a loft. The straw makes the house cooler in summer and warmer in winter. High front and low rear walls may be treated to advantage in the same way.

Where a straw loft is built in the half-monitor house, the light is excluded from the upper windows. To supplement the light from the lower windows, it is suggested that windows be put in the rear side below the dropping boards. With proper distribution of light from the back and sides as well as from the front, the hens will keep the litter more evenly spread.

Paint for Machinery

AN INQUIRY came to me a few days ago for information on paint for farm machinery. The farmer making the inquiry was interested in painting his machinery because he was about to have a sale. While it is important to have everything spick and span when a sale is on, it is equally good business to occasionally paint the machines for protection.

Paint for farm machinery and implements should dry harder and give a more water resistant coat than ordinary house paint. For this reason ordinary paste pigments mixed with linseed oil alone are not as good as pigments ground in Japan drier, or coach-painters' colors, mixed with varnish and thinner. The material recommended by a reliable painter for painting farm machinery is the ordinary tinners' red, which may be easily secured and is reasonable in price.

The following has been recommended by the Division of Chemistry of the United States Department of Agriculture:

First coat (⅝ to ¾ gallon):

Pigment ground in linseed oil	5 lbs.
Coach painters' Japan	1 pt.
Turpentine	2 pts.

For a second coat, use two pints of Japan and one of turpentine instead of the amounts named.

Fire as an Enemy of the Farmer

"PROTECTING the Farm Against Fire" is the title of a recent bulletin published by the Alabama Agricultural Experiment Station. In this bulletin the principal causes of farm fires are outlined, with some control measures described. This is a topic about which every farmer should be concerned. The lack of protection that is afforded the city dweller is quite evident in most rural communities. More might well be done to improve this situation.

The annual loss due to farm fires is an enormous item. According to the Alabama bulletin, the National Board of Fire Underwriters records fire losses, and during the period 1918 to 1921 the loss amounted to more than $61,000 per day in the United States. In addition to this, there are many losses not reported, because many farmers do not carry insurance.

The most common cause of farm fires is lightning, according to the Alabama bulletin. Some authorities estimate as high as 50 per cent of the farm fires are caused by lightning. The greatest protection and the best insurance investment against this cause of fires is the lightning rod, properly installed. An excellent bulletin on lightning rods, their value and their installation may be secured from the United States Department of Agriculture, Washington, D. C.

The second most common cause of farm fires is the defective chimney. If there is any question as to the condition of the chimney, don't delay giving it a thorough inspection. The federal department of agriculture also has a bulletin devoted to the construction of the fireplace and the chimney.

Other causes of fires that are mentioned in order of their importance are: sparks on the roof, stoves and heating equipment, matches, spontaneous combustion, gasoline, lighting, and poor housekeeping. It should be mentioned that many times the real cause of fires is due to carelessness.

The possibility of a fire at any time is sufficiently great to justify every property owner giving it consideration. In some communities, special fire fighting apparatus has been purchased. In some cases, such equipment gives protection to the small villages as well as to the surrounding farms. In other communities such equipment is farmer owned.

People sometimes take the attitude that if their property is insured they have nothing to worry about. The fact of the matter is that fire insurance does not prevent fires, and wherever there is a fire there is bound to be a loss that cannot be replaced.

There are many keepsakes, furniture, house furnishings and other valuables that are lost by fire, the value of which it is difficult to measure in dollars and cents.

Insurance protection for such things cannot be provided in the form of a policy, but must be provided in the form of fire prevention. It may take the form of a more adequate water supply, with means of providing it under pressure, or it may mean lightning rods, or a fire extinguisher. It may also mean better constructed chimneys, or proper precaution to prevent the collection of rubbish or other material that may cause a fire. It may require only a conscious effort to avoid carelessness in connection with the whole matter.

Making Farm Homes Attractive

EVERY farmer can make his home more attractive by applying some paint and planting some shrubs. The latter method is more often neglected than the former. Most farmers appreciate the need of a coat of paint as a matter of protection, even if they do not think about the attractive feature; however, there are too few who give a second thought to the matter of planting shrubs to make their homes attractive. The fruit grower is less guilty on this score than the grain and stock farmer. An attractive home adds to the enjoyment of life.

Profitable Poultry

By Ralston R. Hannas

Selection of Pullets

IN THIS year's new crop of pullets, there will undoubtedly be some that will not be worth keeping. These can easily be distinguished from the others by noticing certain characteristics. Room in the poultry house should be saved by dispensing with them. Eat 'em as wanted, and don't keep them on a chance that they will lay.

It is not worth while to save any pullet that shows:

1. Low vitality.

2. Any defect, such as a roached or humped back, crooked feet, or very small body.

3. Late maturity. By this is meant one that matures and starts to lay later than the rest of the flock. There is always a difference in the length of time it takes various individuals to mature, but the flock, as a whole, will mature in about two weeks from the time the first ones started to lay. Those birds that start to lay much later than the others are not so good as the others. This, of course, applies to pullets that were hatched at the same time.

In the yellow-skinned breeds, such as the American breeds—Plymouth Rocks, Rhode Island Reds, and Wyandottes—and Leghorns, the shanks should be a deep yellow. Any that are pale at this time show that something is the matter with the birds that have these pale shanks, and these pullets are therefore not worth keeping.

A good bird has a broad, deep body—broad, as measured from hip to hip and for the full length of the back, and deep, as measured from the middle of the back to the tip of the breast bone. A bird of this type has the capacity to handle a large amount of feed and turn it into eggs. She generally shows, also, a width of three fingers, at least, in the pelvic region, that is, from the keel bone to the pelvic bones—they are the bones on each side of the vent. A long keel or breast bone is also desired in a good layer. She has an erect carriage and shows alertness in every move she makes.

Her temperament is a good indication of her laying ability, and this is shown by her head and face. A head of medium length and breadth is found on a good layer—not a long, narrow head, known as a crow head, which is an indication of a low vitality bird, nor a short broad head, which is an indication of beefiness.

Did you know that a bird has expression in her face? Well, she has. She may have a keen, intelligent expression, as shown by a bright, full eye, containing a well rounded pupil, showing a portion of the white in front of the pupil. This is a good bird. She has enough nervous energy and friendliness to be interested in what is going on around her and is not easily frightened. All her movements show alertness and action. Contrasted with her is the bird that shows lack of expression in her eye; it is dull and listless; she may have an "overhanging eye;" she may not show any interest in what is going on. There is also the type that is flighty and easily frightened; she is no good. There is the beefy type, which shows fat in all portions of the face. This bird takes on weight instead of laying eggs.

Try these tests on some of your birds and see how they match up.

The New Pullets

THE NEW pullets deserve a good start. Better see to it that they are all in the houses before the damp, cold nights overtake them. Many a good pullet has been spoiled by being allowed to roost out on range in the trees in late fall. The danger is that they are likely to become affected with colds, roup or canker. If this happens, it means doctoring them up before putting them in the houses, which not only requires extra time, but does not insure that the birds will be cured for good, as these troubles are very likely to hang on all winter, with consequent losses in birds and in egg production. Prevent all this by getting the pullets in the houses while good weather holds up.

They should be in the houses before they really start to lay as a group. This is a very tricky time in the life of a pullet. She is coming into production, which means that her body is undergoing certain physical changes which affect her tremendously. The same delicate physical condition exists that is present in larger animals when they are about to reproduce. Anything out of the ordinary at this time is a shock to the system. So with a pullet. Moving pullets frequently and from one house to another just at this time will undoubtedly prove to be a shock to them, which will result in different effects: a moult, or a drop in egg production if they have started to lay, or a weakening of vitality, making them liable to infection with disease. A long time is therefore lost waiting for them to come back into good condition again. Having them in the houses before they start to lay will help to prevent all this.

The houses should be cleaned thoroughly and disinfected with a five per cent solution of some good commercial disinfectant. All repairs should have been made so that the houses are comfortable. Fresh litter should be on the floors, not too much, however, for the birds have not been used to scratching in litter while on range. Teach them to go after their grain by putting only enough litter on the floor to cover it, and gradually increase the amount of litter until there is a depth of about eight inches. Make sure water pans are easily available; the same with feed hoppers. Nests should be darkened to make them attractive for the new pullets. If trapnests are used, they should be in proper working order. Have a regular schedule for taking care of them and hold to this schedule and best results will be obtained.

Banding the Pullets

IF TRAPNESTING is to be practiced, some poultry keepers take time to band all the pullets when they put them in the laying houses whether they have laid or not. A better plan is to legband them as soon as each bird starts to lay. This is not a difficult or a bothersome process. The bands and pliers can be kept in a box in a trapnest, the door of which is kept closed so the birds cannot get at them. By banding them as they begin to lay, a check can be had on the relative abilities of the birds by a certain date. For example, if it is desired to remove all birds from the pen that have not laid by the first of January, all pullets that are not wearing legbands by that time can automatically be removed, for they have not laid, and there is no guess work about it, unless there have been a large number of eggs laid on the floor.

In banding them, it is wise to have some system about the process. Considerable time will be saved in the actual trapnesting if the bands are all on the same legs, that is, either all on the right leg of each bird or all on the left leg. The birds can be handled more quickly and more easily. It doesn't make any difference which leg is used—that is for the operator to decide. Personally, I prefer the right leg. Put the band on upside down, that is, have it so it is upside down when the bird is standing. This means that it is rightside up when the bird is taken out of the trapnest and the number read. This will also help in trapping.

A definite system of numbering can be used that will serve to tell the whole story about any particular individual without having to refer to the recorded story. For example, if there are only a few pullets from certain hens, a certain set of numbers can be reserved for these pullets. The numbers from 10 through 19 might be used for pullets from a certain hen, those from 20 through 29 might be used for pullets from another hen, the thirties reserved for pullets from another hen, and so on. A glance at these numbers would tell immediately what hen these pullets were from. Any variation of this system can be worked out and used as desired.

Bumblefoot

A LAMENESS in hens is often found, upon examination, to be due to a sore or lump on the bottom of the foot, which is known as bumblefoot. This lump or abscess may result from a variety of causes, some of which are too high roosts, too narrow roosts, wounds caused by stepping on splinters of glass, nails or other sharp articles.

Treatment consists in cutting into the lump or abscess with a sharp knife, and letting out all the pus, making sure to get out the "core." Paint around the wound with iodine, cover with carbolated vaseline, and sprinkle iodoform over this. Put a bandage on the wound and keep the bird in a clean cage or coop until the wound heals. Have clean, soft litter in the coop to prevent infection and to make it as comfortable for the bird as possible. After two days, dress the wound again, wash with warm water, apply vaseline and iodoform, and put on a clean bandage. If the core is not gotten out in the first operation, the trouble is apt to become chronic, that is, it will reappear.

Having roosts no higher from the floor than 30 inches or three feet and no wider than two inches will help to prevent this trouble, as will having about eight inches of a good litter, such as wheat or rye straw, on the floor of the poultry house. Bumblefoot is especially likely to occur where houses have a cement floor and the litter is scanty. The birds jumping down from the roosts or nests are likely to bruise their feet, which may result in the abscess.

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Tests Paper for Wrapping Fruit

PRACTICAL tests to determine suitable papers for wrapping fruits and vegetables conducted by the Bureau of Chemistry of the United States Department of Agriculture show that paper for wrapping apples, oranges, lemons, pears and tomatoes should weigh 10 or 12 pounds per ream of 500 sheets 24 by 36 inches in size, and that it should have a bursting strength of not less than six points.

It should have sufficient flexibility and strength to withstand the vigorous rapid twist given the paper in wrapping and to give a smooth, attractive appearance to the wrapped fruit. Paper complying with these requirements generally has been found satisfactory by the packers, but paper not complying with the specifications has not proved serviceable.

Wrapping papers of the right kind will retard evaporation and thus tend to keep fruits and vegetables in a fresh condition. They will reduce damage in shipment from rubbing or jarring, retard final ripening until removed by the retailer, and they will give protection from dust, frost or the sun. While it cannot be expected that one kind of paper will prove suitable for all kinds of fruits and vegetables; the specifications will enable shippers to purchase satisfactory wrapping papers.

In order to secure additional information for fruit packers, the Bureau of Chemistry will examine samples of paper that have proved unsatisfactory in service. The sample sent in must consist of at least 20 wrappers, 10 new and 10 that show the paper torn or damaged in wrapping fruit. A full statement as to the points in which the paper is unsatisfactory, the name of the maker, brand name of paper, and approximate percentage of the paper failing during wrapping, should accompany the sample which should be mailed to the bureau at Washington, D. C.

Nitrogen Problem in Soil Fertility

THE NATIONAL Industrial Conference Board, which is making an exhaustive investigation of the agricultural situation of the United States, estimates that 9,000,000 tons of nitrogen should be used each year to meet the needs of American agriculture, but that as a matter of fact only about 5,400,000 tons are being used. Thus, it is clear that our soils are steadily becoming more deficient in nitrogen, not to speak of other essentials of soil fertility.

One of the principal sources of commercial nitrogen has been the mines in the highlands of the mountains near the west coast of South America. This source of nitrogen promises to meet the world needs for about 100 years. However, the price of this nitrogen is somewhat high due to the transportation cost and the tax of $11.20 per short ton assessed by the Chilean government.

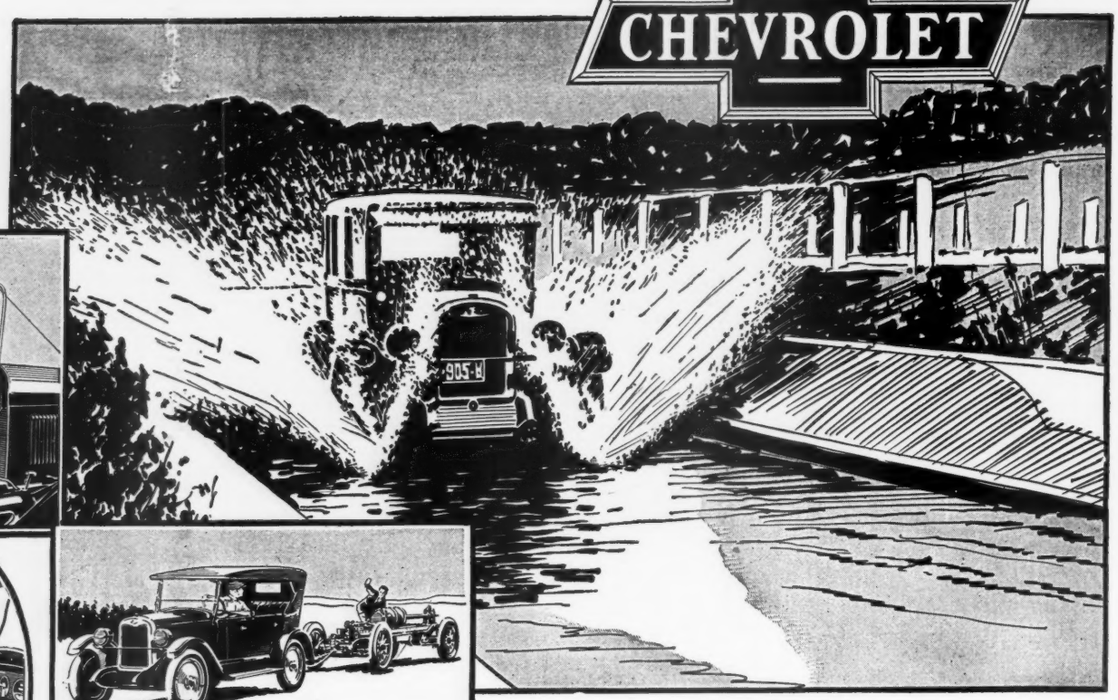
Of late years a considerable quantity of ammonium sulphate has been manufactured in this country as a by-product in industry. A gas plant in Chicago, for instance, manufactures about 10,000 tons of ammonium sulphate each year. This plant supplies about half of Chicago with its gas requirements.

New Film on Japanese Beetle

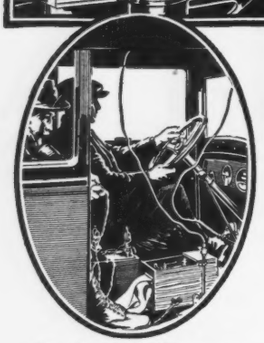
"HOLDING the Japanese Beetle" is the title of a new motion picture reel that has been made by the United States Department of Agriculture and which may be obtained for use free of charge, not including express charges, from the United States Department of Agriculture. Miscellaneous Circular 27, which may be obtained from the United States Department of Agriculture, Washington, D. C., tells how this film may be obtained from the department

for Economical Transportation

CHEVROLET



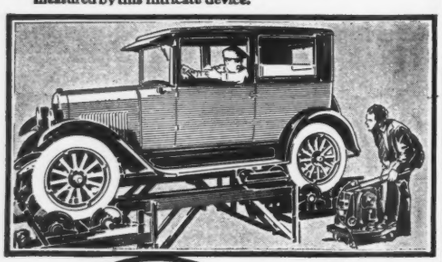
Fuel Economy
is proved by an apparatus like a huge graduated "bottle" that measures the gasoline, drop by drop.



Brake Pedal Pressure
and degree of "slowing down" are measured by this intricate device.

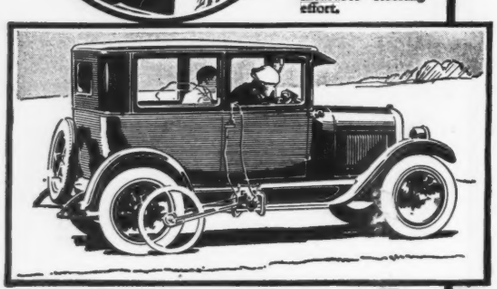
The "Hill-maker"
a dynamometer which mechanically reproduces the effect of hills, longer and steeper than any in existence.

The "Bathtub" Test
that proves Chevrolet's supremacy over conditions encountered in excessively wet weather and on flooded roadways.



Chevrolet Brakes
are tested and their efficiency proved by this instrument.

Ease of Steering
is proved by this apparatus which measures steering effort.



Chevrolet's Speed
is accurately measured to the fraction of a mile by this electric "fifth wheel."

Testing 24 hours a day to prove Chevrolet's sterling quality

Forty miles northwest of Detroit lies the 1125-acre tract, known as the General Motors Proving Ground.

Patterned with roads of concrete, clay and gravel and crowned with hills of various lengths and steepness, it is the finest automotive testing laboratory ever created by man.

Here the collective experience and skill of Chevrolet and General Motors engineers (a research staff unequalled in the industry) are brought to bear on the problem of keeping Chevrolet the most modern and most dependable car of its class in the world.

Here, night and day, the testers drive until the speedometers register 20-30-40,000 miles and more!

Here are costly, intricate machines, superhumanly accurate and specially designed to reveal full knowledge of some fact which will contribute to a greater measure of power, acceleration, durability, comfort and economy.

Here are fascinating examples of inventive ingenuity such as—devices which accurately determine brake, clutch, and steering wheel effort, making possible the utmost ease of handling; electric torque speedometers; and a "hill-making" dynamometer, which gives owners the benefits of all that could be learned by testing on an actual hill of any steepness 1,000 miles or more long.

Here, in short, are testing facilities available to the maker of no other low-priced car—and for the want of which it would be impossible to produce a car of Chevrolet's modern design and quality construction, at Chevrolet's low prices!

Today's Chevrolet is the smoothest in Chevrolet history. Its flawless operation at every speed borders on the sensational—*and this was brought into existence by continuous testing at the Proving Ground!*

Today's Chevrolet enjoys a world-wide reputation for long life and inexpensive maintenance—*both of which valued qualities were developed at the Proving Ground!*

There is a Chevrolet dealer near you to serve you. See him now! Arrange to drive the smoothest Chevrolet in Chevrolet history. Learn for yourself the new order of value, beauty, comfort and multiple cylinder performance which it brings into existence and which is winning new buyers at a rate that is making Chevrolet, more than ever before, the world's largest builder of gearshift cars!

Touring or Roadster $510, Coupe or Coach $645, Sedan $735, Landau $765, ½-Ton Truck $375 and 1-Ton Truck, $495 (*Chassis Only*). ***All prices f. o. b. Flint, Mich.***

CHEVROLET MOTOR COMPANY, DETROIT, MICHIGAN, *Division of General Motors Corporation*

QUALITY AT LOW COST